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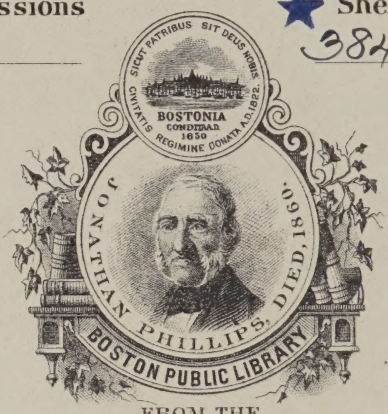

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A

NATURAL HISTORY

OF

NEW AND RARE

FERNS:

CONTAINING SPECIES AND VARIETIES,
NONE OF WHICH ARE INCLUDED IN ANY OF THE EIGHT VOLUMES OF
"FERNS, BRITISH AND EXOTIC,"

AMONGST WHICH ARE

THE NEW HYMENOPHYLLUMS AND TRICHOMANES.

* 3845.77

BY

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Author of a "Natural History of British and Exotic Ferns," "British Grasses," Etc., Etc.

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PREFACE.

Although the "Natural History of British and Exotic Ferns" contains coloured illustrations of between five and six hundred species of Ferns cultivated in this country, still so many new ones have been introduced during its progress, that it has been deemed necessary to publish a separate volume, under the title of "New and Rare Ferns," to be had either as an independent work, or as an addenda to the eight volumes already published. This work has now also been completed, and will be found to contain coloured plates or wood-cut illustrations of one hundred and fifty-one new species, or new varieties of species that have been already figured in the preceding volumes.

No class of Ferns have received additions to so largely during the last few years as the *Hymenophyllums* and *Trichomanes*, and these will be found figured and described in "New and Rare Ferns." There is an especial beauty in these plants, their thin, delicate fronds attracting universal attention. Until lately it has only been the few who have been enabled to grow them, because they require a special treatment; they delight in a very humid atmosphere, and many of them in the temperature of a stove. The newly-contrived Ward-case will suit their requirements admirably: it is a miniature hothouse that can be kept in a drawing-room; in fact it is a Ward-case that has a cistern below for hot water, all the care necessary being to re-fill it with a kettle of hot water night and morning. When generally known these cases will be found in all good houses. The Aquarium and the Ward-case are not only

beautiful to look into, but they are intellectual ornaments. Of late years the drawing-room amusements, consequent upon discovery, have taken a higher tone. Hundreds of miles away from the ocean we can exhibit the various species of sea anemone, crabs, star-fish, and other denizens of the salt water. Thousands of miles away from the native rocks and woods of New Zealand, or of the East and West Indies, as instances, we can grow the *Hymenophyllums* and *Trichomanes*. As advancement takes place in science, we feel an advantage in bringing its interesting features as much as possible before our eyes: it is thus that Ferns have become so deservedly popular. Many varieties of exceeding beauty have been added to the Ferns of the British Isles, but their number is so great that it would have swollen the "New and Rare Ferns" beyond the ordinary limits of such a work to have described them all; they have, therefore, been reserved for the pages of "Our Native Ferns."

The object had in view in venturing to publish the "British and Exotic Ferns," was to give a pictorial illustration of each species that was to be found in our gardens and in our hot-houses, so that the cultivator might ascertain without much trouble to himself, whether the name he used was right or wrong. In order to render this task both easy and useful, the index of reference of synonymes has been made as full as possible, the eight volumes and the addenda containing five thousand six hundred and sixty-eight references. The work has been both difficult and tedious, and whatever imperfections may have crept into its pages, still the author has had the satisfaction of finding it has done some good, inasmuch as the plants in our private gardens are now more correctly named than was the case before there were coloured plates within the reach of gardeners to which to refer them.

Observatory, Beeston, May 27th., 1862.

ONYCHIUM AURATUM.

NEW AND RARE FERNS.

Pinna of mature Frond—upper side.

ONYCHIUM AURATUM.

KAULFUSS. HOOKER. MOORE.

PLATE I.

Lomaria aurea,	WALLICH.
" *caruifolia,*	WALLICH.
" *decomposita,*	DON.?
Allosorus auratus,	PRESL.
Pteris chrysocarpa,	HOOKER AND GREVILLE.
" *siliculosa,*	DESVAUX.

Onychium—From *onyx*—a claw, in reference to the shape of the lobes.
Auratum—Golden, in reference to the colour of the involucres.

AN evergreen stove species, and very handsome.

Native of the East Indies, Malay Islands, Manilla, Luzon, Java, Bootan, Nepal, and Khasya.

The fronds, which are sub-membranaceous, are ovate-lanceolate, acuminate, glossy, very compound, the primary and secondary divisions pinnated. Segments linear, and all pointing upwards, the fertile ones elongated.

Pinnæ opposite below, and alternate above. Stipes rounded on the under side, and fluted above.

Sori linear-elongated, covering the back of the fertile segments. Involucres golden.

Veins simple.

For a plant I am indebted to Mr. James Veitch, of the Exotic Nursery, Chelsea; and for fronds to M. Schott, of the Imperial Gardens, Schonbrünn, and to Mr. R. Sim, of Foot's Cray.

Bitolepis Alaurocaulis.

Pinna of fertile Frond—under side.

HYPOLEPIS AMAURORACHIS.

Hooker. Kunze.

PLATE II.

Cheilanthes amaurorachis, Kunze.

Hypolepis—From *hypo*—under, and *lepis*—a scale. *Amaurorachis*—Dark rachis.

A GREENHOUSE species.

Native of New Holland.

The fronds, which are membranaceous and very hairy, are ovate-acuminate, bi or tri-pinnato-pinnatifid, being less divided near the apex. The pinnæ petiolate, the basal ones opposite. The pinnules, primary ones decurrent and oblong-obtuse, the secondary ones sinuato-incised.

Rachis and stipes purplish, rough, and very hirsute.

Rhizoma creeping.

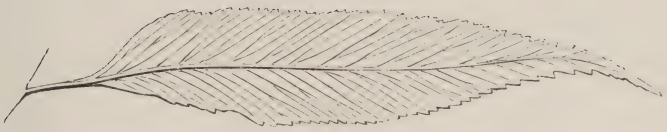
Sori marginal, small, and sub-globose in form, situated in the sinus of the lobes.

Veinlets forked and free.

A plant easily managed, and speedily making a pretty specimen with ordinary care, as the fast-creeping rhizoma soon spreads itself in all directions.

For a plant my thanks are due to Messrs. Booth, of Hamburg; and for fronds to Mr. R. Sim, of Foot's Cray, Kent.

HETERODON.



Pinna of mature Frond—upper side.

ASPLENIUM HETERODON.

Blume. Hooker. Mettenius. Moore. Kunze.
(*Not of* Moritz *or of* Continental Gardens.)

PLATE III.

Asplenium—Spleenwort. *Heterodon*—Different.

In the Section Euasplenium of Authors.

An evergreen stove Fern.

Native of Java.

A parasite, growing upon trees.

The fronds, which are coriaceo-membranaceous, are ovate-pinnated, the pinnæ petiolate and slightly scaly; the apex acuminate and lengthy; base unequally cuneate. Pinnæ sub-opposite below, alternate above, the basal pinnæ largest, becoming smaller from the base to the apex of the frond.

Veins forked.

Sori costate and elongate, distant from the margin. Indusium membranaceous. Caudex erect and scaly.

Length of frond from twelve to twenty-four inches; length of pinnæ from two to three inches; breadth of pinnæ about an inch; number of pinnæ from eight to ten pairs.

The fronds, which are eventually glabrous, are deep green in colour.

The *Asplenium heterodon* of Moritz, is the *A. nigrescens*, and that of Continental Gardens is the *A. vulcanicum*.

I am indebted to Mr. R. Sim, of Foot's Cray, for the frond from which the present plate has been figured.

A. PINNATIFIDUM.

Pinna of mature Frond—upper side.

ASPLENIUM CONTIGUUM.

KAULFUSS. HOOKER AND ARNOTT. BRACKENRIDGE. METTENIUS. MOORE. SPRENGEL. PRESL. GAUDICHAUD.

PLATE IV.—A.

Asplenium filiforme,	KAULFUSS. HOOKER AND ARNOTT.
" "	METTENIUS. BRACKENRIDGE.
" *lepturus*,	J. SMITH.
Tarachia contigua,	PRESL.

Asplenium—Spleenwort. *Contiguum*—Contiguous.

IN THE SECTION EUASPLENIUM OF AUTHORS.

A STOVE species.

Native of Oahu, Sandwich Islands, Luzon, Neilgherries, and Ceylon.

The fronds, which are pinnate, have linear-lanceolate attenuate pinnæ, the pinnæ being inciso-serrate; base more or less cuneate. Pinnæ distant below, becoming approximate above; opposite or sub-opposite below, alternate above, and of equal size except near the apex. Petiolate.

Sori contiguous, and parallel with the costa.

Stipes and rachis slightly scaly.

Fronds about twelve inches in length, the stipes occupying the lower half.

Pinnæ from one inch and a half to three inches in length.

There are several forms of this plant.

Variety *Filiforme* (which is the *Asplenium filiforme* of Kaulfuss) has the serratures of the pinnæ more profoundly incised, and the apex of the frond is drawn out to a lengthy filiform point.

Variety *Lepturus* has larger pinnæ, being five to six inches in length.

My thanks are due to Mr. R. Sim, of Foot's Cray, for the present illustration.

Portion of fertile Frond—under side.

ASPLENIUM PINNATIFIDUM.

NUTTALL. HOOKER. A. GRAY. METTENIUS. SPRENGEL. PRESL. FEE. KUNZE.

PLATE IV.—B.

Asplenium rhizophyllum, var. *pinnatifidum*, BARTON.

Asplenium—Spleenwort. *Pinnatifidum*—Pinnatifid.

IN THE SECTION EUASPLENIUM OF AUTHORS.

A GREENHOUSE species.

Native of the United States of America, Philadelphia, Alleghanies, Southern Tennessee, North Carolina, and Missouri.

Sir W. J. Hooker remarks that this plant, although very distinct from *Camptosorus rhizophyllus*, (the *Asplenium rhizophyllum* of Linnæus, see Plate XIV.—A, vol. v. and page 43 of same volume of Ferns, British and Exotic,) nevertheless it has much of its habit; the points of the fronds are not however as in that plant rooting or viviparous.

Fronds almost membranaceous, flaccid, base subhastate, lanceolate, profoundly pinnatifid, almost pinnate below, and sinuato-lobate above.

Veins repeatedly dichotomous.

Sori brief, linear-oblong, and but few on each lobe, and even solitary in the smaller ones.

Caudex short and creeping.

Length of frond from four to five inches, with a stipes, which is cæspitose and ebeneous at the base.

The illustration is from a frond forwarded by Mr. R. Sim, of Foot's Cray.

GYMNOGRAMMA PULCHELLA.

V

Barren pinna.

GYMNOGRAMMA PULCHELLA.

Linden. Moore. J. Smith.

PLATE V.

Gymnogramma—Naked writing, in allusion to the naked sori.
Pulchella—Fair.

A very handsome species.

A stove evergreen Fern.

Native of Venezuela.

The form of the frond is triangular, tripinnate, and a marked character in it is that it is frequently divided at the point, and thus bearing twin fronds on the same stem. The fronds are erect, spreading, from four to eight inches wide, broad as long, finely divided, deep green, and slightly powdered above, and beneath very densely covered with a silvery-white farina.

The fronds rise from tufted crowns, that is, rhizoma upright and fasciculate.

Veins forked.

Sori immersed in the white farinose powder.

For plants my thanks are due to Mr. Joseph Henderson, of Wentworth, and to Mr. E. Cooling, Nurseryman, Derby.

It may be procured of any respectable Nurseryman.

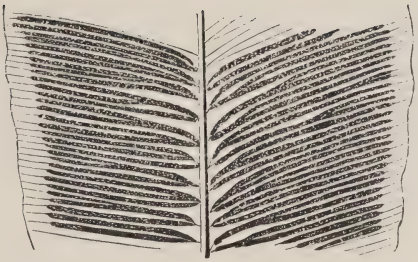
The illustration is from a plant in my own collection.

GYMNOGRAMMA PERUVIANA.

VI

GYMNOGRAMM[illegible] JAVANICA.

VII



Portion of fertile pinna—under side.

GYMNOGRAMMA JAVANICA.

Blume. Moore.

PLATE VII.

Coniogramma Javanica, Fee. J. Smith.
Gymnogramma variegata, Of Continental Gardens.

Gymnogramma—Naked writing, in allusion to the naked sori.
Javanica—Javanese.

A magnificent Fern, worthy of being in every collection.

An evergreen stove species.

Native of Java.

The fronds, which are bipinnate and of good size, are triangular in form, and spreading; pinnæ distant, lower pinnules petiolate, upper ones sessile. Pinnæ entire, two inches wide and eight inches long, smooth, colour light green, with yellowish streaks above, pale beneath. Stem scaly at base, green above, and brownish on under side.

Length of frond from five to six feet.

Veins forked and free, their apices club-shaped, and shewing on the upper surface a row of pale yellowish-green dots near the margin.

Rhizoma somewhat horizontal.

Sori covering all the veins except near their apices.

For a plant of this exquisite Fern my thanks are due to M. Schott, Director of the Imperial Gardens of Schonbrünn, Vienna; and for fronds to Mr. Joseph Henderson, of Wentworth.

It may be procured of Messrs. Veitch, of Chelsea; Sim, of Foot's Cray; and Rollisson, of Tooting.

The illustration is from Mr. Henderson's fronds.

NOTHOCHLÆNA FLAVENS.

VIII

Fertile pinna—upper side.

NOTHOCHLÆNA FLAVENS.

Moore.

PLATE VIII.

Cincinalis flavens,	Desvaux. J. Smith.
Acrostichum flavens,	Swartz.
Gymnogramme flavens,	Kaulfuss.

Nothochlæna—From the Greek, *nothos*—spurious, and *chlaina*—a cloak, in allusion to the sori. *Flavens*—Yellow.

A very fine gold Fern, the under side of the frond being covered with a rich yellow farinose powder.

An evergreen stove species.

Native of Central America.

The fronds are bipinnate, the lower pinnæ bearing bluntly-oblong pinnules, the superior ones becoming sessile and the terminal one lobed; above a rigid green, below brilliant yellow, from copious farinæ. Branches sub-opposite, ascending.

Sori linear, continuous, and becoming after a time confluent, and thus forming a broad dark marginal belt of rounded sori,

which give a fine appearance in contrast on the bright yellow frond.

Stipes ebeneous, with a plum-bloom upon it, and being remotely scaly.

For plants my thanks are due to Sir W. J. Hooker, Director of the Royal Gardens, Kew, and to Mr. E. Cooling, Mile-ash Nursery, Derby.

It may be procured of Messrs. Veitch, of Chelsea; Sim, of Foot's Cray; Rollisson, of Tooting; A. Henderson, of Pine-apple Place; and Cooling, of Derby.

The illustration is from a plant in my own collection.

Plant reduced, shewing the habit of this Fern.

PTERIS ASPERICAULIS, Var. Tricolor.

Moore.

PLATE IX.

Pteris—Brake. *Tricolor*—Three-coloured.

One of the most charming Ferns yet introduced, being graceful in habit, elegant in form, moderate in size, and splendidly variegated with green, white, and red, well contrasted.

Native of Malacca.

Introduced a few months ago by M. Linden.

Fronds pinnate, the basal pinnæ posterially branched and the pinnæ pinnatifid. The upper portion of the segments is of a vivid dark green, the basal portion being silvery-grey, whilst the rachis or rib is of a bright purplish colour, thus each pinna has a wide silvery stripe down its centre, in the centre of which is a well-marked red line. The young fronds are entirely red, and the veins and hairy scales are also red.

In the form and habit of this plant, it resembles *Pteris aspericaulis* so closely as to convince Botanists that it is a variegated form of that Fern. Pinnæ opposite, usually four pairs and an ultimate larger one; pinnules opposite and approximate, with a very large ultimate one, which is attenuated, the others being rounded at the apex.

Length of frond two feet.

From the young fronds being purplish red or bright rose, afterwards changing to a red brown, and then to green, there is a diversity of colours in the fronds at the same time on each plant, which adds considerably to its beauty.

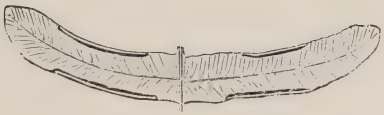
Veins very prominent and forked.

Sir W. J. Hooker considers the *P. tricolor* a variegated variety of *P. quadriaurita*, and Mr. Thomas Moore, a variety of *P. aspericaulis*.

For fronds my thanks are due to Mr. Edwin Cooling, of the Mile-ash Nursery, Derby.

It may be procured from Messrs. Veitch, of Chelsea; Rollisson, of Tooting; or Cooling, of Derby; at the price of two guineas.

The illustration is from Mr. Cooling's fronds.



Fertile pinnules—under side.

PTERIS ARGYREA.

T. Moore.

PLATE X.

Pteris—Brake. *Argyrea*—Silvery.

The present Fern is the first variegated one that has been introduced to cultivators, and is extremely handsome.

Native of Central India.

Introduced by Messrs. Veitch and Son.

Fronds pinnate with pinnatifid pinnæ, the basal ones producing either one or two posterior branches, generally pinnate; the segments above an inch in length, and bluntly linear-falcate in form. A broad central silvery stripe down the centre of each pinna makes it a beautiful Fern.

Length of frond five feet, width two feet and a half.

Caudex short and erect. Stipes long and stout, usually two feet and a half long; base scaly.

The pinnæ and branches end in a lengthy narrow tail-like point.

A very handsome variegated Fern.

Mr. Moore regards this Fern as nearly allied to *P. quadriaurita*, *P. nemoralis*, *P. felosma*, and *P. longispinula*.

My thanks are due to Mr. R. Sim, of Foot's Cray; and to Mr. E. Cooling, of Derby; for fronds.

The illustration is from Mr. E. Cooling's fronds.

Apex of barren Frond—upper side.

LASTREA FILIX-MAS, Var. Schofieldii.

PLATE XI.—A.

Lastrea—.....? *Filix-mas*—Male Fern. *Schofieldii*—Schofield's.

This curious dwarf Fern has been considered a variety of *Lastrea dilatata*, and also of *L. spinulosa*. It is permanent and pretty, frequently ramose or multifid.

Found near Buxton, in Derbyshire.

Length of frond only two to four inches.

For a description of *L. filix-mas*, see p. 41, vol. vi, of the "Natural History of British and Exotic Ferns."

The fronds have been forwarded to me by Mr. R. Sim, of Foot's Cray.

Fertile pinnule--under side.

ASPLENIUM LANCEOLATUM, Var. Microdon.

Moore.

PLATE XI.—B.

Asplenium marinum, var. microdon, Moore. Hooker.

Asplenium—Spleenwort. *Lanceolatum*—Lanceolate.
Microdon—Small-toothed.

At page 79, vol. v, of the "Natural History of British and Exotic Ferns," *Asplenium lanceolatum* has been described, to which reference is made. The present variety is a most remarkable one, and was found in Guernsey in 1855 by Miss Wilkinson, and an account of it published by Mr. Thomas Moore, of the Chelsea Botanic Gardens.

When first discovered it was thought to be a variety of *A. marinum,* owing to its being so little divided: larger fronds have shewn it to be an undivided variety of *A. lanceolatum.* It is well worthy of cultivation, being both handsome and distinct.

The fronds are pinnate, and more linear in form than linear-lanceolate, and tapering to a point. The pinnæ distinct below, with a brief stalk, broadly-triangular in form, becoming adnate above. Length of frond from nine to twelve inches.

Sori near the margin, oblong and small.

For fronds I am indebted to Mr. Thomas Moore, of Chelsea; and to Mr. Sim, of Foot's Cray.

Apex of fertile Frond—under side.

ASPLENIUM MARINUM, Var. Ramosum.

Moore.

PLATE XI.—C.

Asplenium—Spleenwort. *Marinum*—Sea-side. *Ramosum*—Branched.

At page 69, vol. v, of the "Natural History of British and Exotic Ferns," will be found a description of *A. marinum*. The variety now to be described bears twin fronds on the same stem, or branched, and is a very distinct and pretty Fern.

The fronds are pinnate, the pinnæ sub-undulate, crenate-lobate, with blunt teeth on the lobes.

It was discovered in Dorsetshire, by Mr. Wollaston.

Length of frond from four to nine inches.

For fronds my thanks are due to Mr. Sim, of Foot's Cray.

Barren pinna—upper side.

ASPLENIUM HASTATUM.

Klotzsch. Kunze. Mettenius. Hooker.

PLATE XII.—A.

Asplenium fragrans,	Hooker.	*(Not of* Swartz.)
" *odoratum,*	Moore.	
" *hastatum, var. pterocaulon,*	Hooker.	

Asplenium—Spleenwort. *Hastatum*—Spear-shaped.

In the Section Euasplenium of Authors.

A pretty Fern, but little known amongst cultivators, and closely allied to the *Asplenium falx,* of Desvaux.

An evergreen stove species.

Native of Caraccas, Venezuela, and Andes of Quito.

Fronds pinnate, oblong-ovate in form, the apex being caudate and pinnatifid, petiolate, pinnæ from two to three inches in length, coarsely sinuato-serrate with apex entire, caudex short, ferruginous and paleaceous above. Fronds scarcely coriaceous.

Veins forked, and immersed in the frond.

Sori linear, conspicuous, and almost parallel with the costa.

The illustration is from fronds kindly sent to me by Mr. R. Sim, of Foot's Cray, Kent.

ASPLENIUM HASTATUM. A. ALATUM.

Portion of fertile frond—under side.

ASPLENIUM ALATUM.

HOOKER AND GREVILLE. WILLDENOW. METTENIUS. HUMBOLDT AND BONPLAND. MOORE. J. SMITH. POIRET. SPRENGEL. DESVAUX. KUNZE. KLOTZSCH. FEE. (*Not of* SIEBER, *or* BERTHELOT.)

PLATE XII.—B.

Asplenium pterophorum, PRESL.

Asplenium—Spleenwort *Alatum*—Winged.

A SINGULAR Fern, having broad herbaceous wings on either side of the stipes, and between the pinnæ on the rachis, with a break where each pinna is attached. By no means a common plant in cultivation.

An evergreen stove species.

Native of Tropical America, New Grenada, Venezuela, Peru, Jamaica, Brazil, Sierra Leone, and St. Vincent.

The fronds, which are membranaceous and herbaceous, are pinnate; pinnæ distant and numerous, and equal in size except near the apex of the frond, and from one to two inches in length, almost sessile, base briefly wedge-shaped, the superior base auriculate. The form of the frond is broadly-lanceolate, acuminate, and frequently proliferous at the apex. Stipes and

rachis brown beneath, green above, and winged with a broad green margin.

Length of frond from twelve to eighteen inches; colour bright green.

Veins forked.

Sori linear, oblique, and situated nearer the costa than the margin. Indusium narrow and membranaceous.

My thanks are due to Mr. R. Sim, of Foot's Cray, for fronds of this species, from which the present illustration is taken.

ASPLENIUM SERRATIFOLIUM

XIII

Pinna of mature Frond—upper side.

ASPLENIUM LASERPITIIFOLIUM.

LAMARCK. SWARTZ. WILLDENOW. BLUME. HOOKER. BRACKENRIDGE. METTENIUS. MOORE.

PLATE XIII.

Asplenium robustum,	BLUME.
" *tripinnatum,*	ROXBURGH.
" *riparium,*	BRACKENRIDGE, (*not* LIEBMANN.)
" *patens,*	KAULFUSS. HOOKER AND ARNOTT.
" "	METTENIUS. MOORE.

Asplenium—Spleenwort. *Laserpitiifolium*—Benzoin-leaved.

IN THE SECTION EUASPLENIUM OF AUTHORS.

A VERY handsome Fern, and closely allied to the *Asplenium cuneatum* of Lamarck.

An evergreen stove species.

Native of the East Indies, Mexico, China, Java, Luzon, Malay Islands, etc.

Fronds ovate-lanceolate, acuminate, membranaceous, tripinnate; the primary pinnæ petiolate; ultimate pinnules and segments cuneate and small. Caudex stout, the base scaly.

Length of frond from four to thirty-six inches. Colour vivid green.

Veins flabelliform.

Sori linear, brief, and from two to four on each segment or pinnule.

For fronds my thanks are due to Mr. R. Sim, of Foot's Cray.

ASPLENIUM PLUMOSUM.

XIV

ASPLENIUM CORYMBIFERUM.

Fertile pinna—under side.

ASPLENIUM FILIX-FŒMINA, Var. Corymbiferum.

PLATE XV.

Asplenium—Spleenwort. *Filix-fœmina*—Female Fern.
Corymbiferum—From *corymbus*—a corymb, and *fero*—to bear.

In the Section Athyrium of Authors.

This most charming multifid variety of the "Lady Fern" was found in Guernsey, one of the Channel Islands, several years ago, by Mr. J. James, of Vauvert, and is a valuable addition to our hardy Ferns. The fronds are moderately large, and in habit this Fern closely resembles the normal form of the above species. Being very readily propagated by spores, this lovely variety has rapidly found its way into all good collections.

The apex of each frond is widened out and developed into a large corymbosely fan-shaped tasseled tuft, frequently densely tufted, whilst the apex of each pinna or side division is similarly (although in a less degree) symmetrically tasseled, the whole outline of the frond being fringed. The pinnules are larger, and the tassels broader than in any other variety. It is flat-pinnuled, and has a red tinge.

Length of frond from twelve to twenty inches.

My thanks are due to Mr. J. James, of Vauvert, for fertile fronds of this elegant Fern, from the spores of which many plants have been raised.

The illustration is from a plant in my own collection.

Apex of Frond—under side.

ASPLENIUM FILIX-FŒMINA, Var. Doodioides.

This variety was found in Sussex, and is exceedingly beautiful and distinct, and to all appearance quite constant. It is named *Doodioides*, from the pinnæ resembling in some degree the frond of a *Doodia*. The pinnules are short and irregular, making the pinnæ very narrow, whilst the segments are much toothed at their apices.

Length of frond eighteen inches.

It is in the possession of Mr. Stansfield, of Todmorden, from whom the frond for illustration has been received.

A
B
C

Lowest pinna—upper side.

CHEILANTHES BORSIGIANA.

Reichenbach.

PLATE XVI.—A.

Cheilanthes—From *cheilos*—a lip, and *anthos*—a flower, in reference to the form of the indusium. *Borsigiana*—.....?

One of the most beautiful Ferns of recent introduction, dwarf-growing, and to all appearance somewhat delicate. Quite new, and very rare.

An evergreen stove species.

Native of Peru.

The frond is twice pinnate, or pinnato-pinnatifid; the lower pinnæ bipartite, and the lower segments largest, decreasing in length towards the apex; the under surface is densely covered with a rich yellow farinose powder, whilst the upper surface is sparingly farinose with yellow, especially along the veins.

Rachis triangular; stipes ebeneous and slightly scaly.

Length of frond three inches.

For fronds I am indebted to Mr. J. Henderson, of Wentworth, and Mr. R. Sim, of Foot's Cray.

This species may be procured of Messrs. Sim, of Foot's Cray, and Veitch, Jun., of Chelsea.

The illustration is from a frond sent by Mr. J. Henderson, of Wentworth.

Portion of fertile Frond—under side.

LINDSÆA CULTRATA.

Swartz. Willdenow. Schkuhr. Hooker and Greville.

PLATE XVI.—B.

Adiantum cultratum, Willdenow.

Lindsæa—Named after Mr. Lindsay, an English cryptogamic botanist.
Cultrata—Shaped like a plough coulter.

A beautiful *Adiantum*-looking Fern.

An evergreen stove species.

Native of the East Indies, Java, Ceylon, Luzon, and Philippine Islands.

The fronds are pinnate, and of a lengthened lanceolate form.

The pinnæ ovate, upper base truncate, the apex briefly lobed. Submembranaceous and horizontal.

Sori oblong, and situated on the superior margin of the pinnæ. Indusium opening outwardly.

Stipes almost black; rachis pale brown.

Caudex creeping. Length of frond from six to nine inches. Colour pale green.

Sir W. J. Hooker describes several varieties:—

Minor.—Smaller, with more obtuse pinnæ.

Pallens.—More flaccid, upper margin more lobed, sori smaller and more numerous.

Attenuata.—Pinnæ longer, and nearly acuminated; tall and rigid.

Lucens.—Pinnæ very obtuse, tall; sori extending to the apex; opaque and glossy.

Assamica.—Somewhat resembling *Lucens*, but not glossy.

For a frond my thanks are due to Mr. Joseph Henderson, of Wentworth.

Apex of Frond—upper side.

LINDSÆA LINEARIS.

Swartz. Brown. Kunze. Hooker. Moore.

PLATE XVI.—C.

Lindsæa lunata,	Willdenow.
" *imbricata,*	Desvaux.
Adiantum lineare,	Poiret.

Lindsæa—Named after Mr. Lindsay, an English cryptogamic botanist.
Linearis—Linear.

A pretty, very distinct, small, and rare species.

An evergreen greenhouse Fern.

Native of New Holland, Tasmania, New Zealand, and West Australia.

The fronds, which are pinnated, are linear-acuminate and membranaceous. Pinnæ small, rigid, sessile, and flabellate; sub-opposite near the base.

Stipes long and shining; rachis and stipes purple.

Sori situated on the anterior margin, and uninterrupted.

Caudex creeping.

Length of frond from two to twelve inches.

For the frond illustrated my thanks are due to Mr. R. Sim, of Foot's Cray.

Portion of fertile Frond—under side.

MARATTIA KAULFUSSII.

Kunze.

PLATE XVII.

Marattia lævis,	Kaulfuss. Martens and Galleotti.
" "	Link. (*Not of* Smith.)
" *Weinmanniæfolia,*	Liebmann.
Eupodium Kaulfussii,	J. Smith. Hooker.

Marattia—Named in honour of J. F. Maratti, a Tuscan botanist.
Kaulfussii—Named after the celebrated cryptogamist, Kaulfuss.

In the Section Eupodium of Authors.

A very distinct noble Fern, the fertile fronds being exceedingly beautiful.

A stove species,—evergreen.

Native of Brazil.

The fronds are bi-tripinnate; pinnæ opposite, the secondary alternate. Venation fasciculate, subarboreous, and erect, the fronds proceeding from between two stipulæform fleshy appendages. Base of the stipes clavate.

Veins forked and free.

The present species differs from the other members of this family in the spore-cases being pedicellate.

Length of frond from three to six feet.

For the frond illustrated my obligations are due to Mr. J. Smith, Curator of the Royal Gardens, Kew.

Portion of mature Frond—under side.

ASPLENIUM NITIDUM.

SWARTZ. HOOKER. SCHKUHR. WILLDENOW. BLUME, in part. METTENIUS, in part. POIRET. MOORE. SPRENGEL. DESVAUX. KUNZE. (*Not of* BLUME, which is *Asplenium cuneatum* of LAMARCK and HOOKER; *nor of* METTENIUS, which is *Asplenium spathulinum* of J. SMITH and HOOKER; *nor of* WALLICH, which is *Asplenium affine* of SWARTZ and *Asplenium laserpitiifolium* of LAMARCK; *nor of* WIGHT, which is *Callipteris ambigua.*

PLATE XVIII.

Asplenium insigne,	BLUME. (*Not of* LIEBMANN, which is *Asplenium serra* of LANGSDORFF & FISCHER.)
" *pulchellum,*	WALLICH. (*Not of* RADDI, which is *Asplenium pulchellum* of HOOKER.)
Tarachia nitida,	PRESL.
" *insignis,*	PRESL.
Asplenium cuneatum,	OF SOME ENGLISH COLLECTIONS.

Asplenium—Spleenwort. *Nitidum*—Bright.

A PRETTY Fern.

An evergreen stove species.

Native of India, Java, Ceylon, Moluccas, and Mascaren Islands.

The fronds, which are deltoid, are bipinnate, with pinnæ alternate above, sub-opposite below; pinnules petiolate, the base rounded below, and rhomboid-ovate-angled above. Apex serrato-dentate. Lowest pinnules pinnatifid. Fronds glabrous, paler on the under side.

Sori contiguous, near the costa, and nearly straight.

Stem ebeneous.

A very variable species.

Length of frond from two to three feet, stipes from twelve to fifteen inches.

For fronds my thanks are due to Mr. R. Sim, of Foot's Cray.

Portion of mature Frond—under side.

ASPLENIUM PRÆMORSUM, Var. Canariense.

Moore.

PLATE XIX.—A.

Asplenium—Spleenwort. *Præmorsum*—Jagged-pointed.
Canariense—Canary Islands.

Asplenium Canariense of Willdenow, Poiret, Sprengel, Presl, Fee, and J. Smith, is found in the Canaries and Madeira, and I believe is becoming scarce in those Islands.

It is more dwarf and compact than the more tropical forms of *Asplenium præmorsum*, and being a permanent variety and very handsome, it has been thought desirable to give a figure of it.

For a description of *Asplenium præmorsum* and its varieties, the reader is referred to pages 23-25, vol. v, of my "Natural History of British and Exotic Ferns."

The illustration is from a plant in my own collection, imported from Madeira.

Portion of fertile Frond.

LOMARIA SPICANT, Var. Subserratum.

PLATE XIX.—B.

Lomaria—From *loma*, an edge, in reference to the position of the spore-cases. *Spicant*—Spiked. *Subserratum*—Almost serrated.

An interesting variety found near Malton, in Yorkshire, by Mr. Charles Monkman, of Malton.

The pinnules are very narrow and the frond slender; opposite below, alternate above; horizontal below, and curving upwards above. The sterile fronds are about five inches in length, and the fertile ones ten inches.

Variety of a British species, and constant.

The fronds for illustration were forwarded by Mr. Stansfield, of Vale Garden, Todmorden.

UA HETEROPHYLLUM. B.—L. IMBRICATUM.

LACTUM. D.—L. CONTRACTUM-RAMOSUM.

LOMARIA SPICANT, Var. Heterophyllum.

Moore.

PLATE XX.—A.

Lomaria—From *loma*, an edge, in reference to the position of the spore-cases. *Spicant*—Spiked. *Heterophyllum*—Different-leaved.

Found at Tunbridge Wells, by Mr. Wollaston, and subsequently on Ben Lawers, Scotland, by Mr. James Horsfall.

On this variety are produced fronds in which the lobes are wholly or partially absent, and frequently becoming semicircular in form; inciso-dentate.

Length of sterile frond four inches.

Another variety of a British species. Constant.

The frond illustrated is from a plant in the possession of Mr. Stansfield, of Todmorden.

LOMARIA SPICANT, Var. Imbricatum.

PLATE XX.—B.

Lomaria—From *loma*, an edge, in reference to the position of the spore-cases. *Spicant*—Spiked. *Imbricatum*—Imbricated.

Found in 1858, in the Vale of Todmorden, by Mr. J. Horsfall.

Pinnules approximate and even crowded, so much so that there are fifty pairs in a frond three inches in length; they are exceedingly narrow at the base, and become largest in the centre of the frond.

Base scaly.

A hardy constant variety of a British Fern.

The frond for illustration was forwarded by Mr. Stansfield, of Todmorden.

LOMARIA SPICANT, Variety Contractum.

Lowe.

PLATE XX.—C.

Lomaria—From *loma*, an edge, in reference to the position of the spore-cases. *Spicant*—Spiked. *Contractum*—Shortened

Discovered in July, 1859, in Conway Valley, North Wales, by Mr. J. Holmes.

This variety is quite constant. In beauty it is a gem.

Pinnules remarkably narrow for the lower half of the frond, above larger, irregular, and somewhat triangular in form; the apex attenuated; the basal contracted pinnules incised.

Length of sterile frond five inches.

For a description of *Lomaria spicant* see page 131, vol. iv, of a "Natural History of British and Exotic Ferns," by E. J. Lowe.

The frond for illustration was forwarded by Mr. Stansfield, of Todmorden.

LOMARIA SPICANT, Variety Contractum-ramosum.

Lowe.

PLATE XX.—D.

Lomaria—From *loma*, an edge, in reference to the position of the spore-cases. *Spicant*—Spiked. *Contractum*—Shortened. *Ramosum*—Branching.

Discovered in the Clova Mountains, Scotland, in September, 1859, by Mr. J. Horsfall.

Another very handsome Fern.

The lower portion of the frond much contracted, but scarcely incised; the pinnules in the middle of the frond somewhat larger, irregular in form, but more or less triangular; at two inches from the apex branched, the pinnules larger, irregular, and the apex of the frond narrow and elongated.

For a frond my thanks are due to Mr. Stansfield, of Todmorden.

LOMARIA SPICANT, Var. Ramosum.

Moore. Kinahan.

PLATE XXI.—A.

Lomaria—From *loma*, an edge, in reference to the position of the spore-cases. *Spicant*—Spiked. *Ramosum*—Branched.

The present variety is perhaps the handsomest form of *Lomaria spicant*, of which we are acquainted. It is exceedingly rare.

It has been found in Ireland, near Wicklow, by Dr. Kinahan, and in Mayo, by Captain Eden; in England, at Windermere, by Mr. Hudhart.

This variety has the rachis divided into two or three branches, and the apices of the divisions closely multifidly crisped into convex tufts or tassels; the branches being normal below, and the pinnæ contracted towards the base.

Length about six inches.

For fronds my thanks are due to Mr. C. Monkman, of Malton, and Mr. Stansfield, of Todmorden, from which the present illustrations have been made.

SCOLOPENDRIUM VULGARE, Var. Cristatum.

Moore.

PLATE XXI.—B.

Scolopendrium—Hart's-tongue. *Vulgare*—Common.
Cristatum—Crested.

A very handsome variety of the *Scolopendrium vulgare*.

The fronds are multifid, very much divided, and forming large tasselled heads; the divisions at the apex angular.

Length of frond six or eight inches.

There are several sub-forms of this Fern in cultivation.

For a description of the normal form of *Scolopendrium vulgare* see page 155, vol. v, of my "Natural History of British and Exotic Ferns," and for woodcuts of the varieties *Laceratum*, *Multiforme*, and *Acrocladon*, see page 158 of the same book.

For fronds my thanks are due to Mr. Wollaston, of Chisselhurst, and Mr. Stansfield, of Todmorden.

The illustration is from a plant in my own collection.

Portion of fertile pinna—under side.

ASPIDIUM REMOTUM.

A. Braun. Kunze. Fee. Mettenius.

PLATE XXII.

Lastrea remota,	Moore.
Aspidium rigidum, var. remotum,	A. Braun.
Polystichum remotum,	Koch.

Aspidium—The Shield Fern. *Remotum*—Distant.

In the Section Lastrea of Authors.

The *Aspidium remotum* is a handsome Fern. It was first discovered in the summer of 1859, in Westmorland, by Mr. F. Clowes, of Windermere, who looked upon it as a form of *Lastrea spinulosa.* To Mr. Thomas Moore, of the Chelsea Botanic Gardens, we are indebted for bringing the present species before the public. This well-known authority in Ferns received fronds of this plant from Mr. Clowes, and recognised it as the *Aspidium remotum* of Braun, announcing the discovery to the Linnæan Society, on the 15th. of December, 1859. Thus another species has been added to our British Ferns.

A hardy deciduous species.

Native of Southern Germany, and Windermere, Westmorland.

The fronds, which are erect, are narrow oblong-lanceolate, smooth, and sub-tripinnate; the pinnæ ascending, opposite or sub-opposite, distant below, and ovate-acuminate in form. Pinnules an inch and a quarter in length, briefly stalked, almost pinnate, serrated, and more especially at the apex; ovate below, and linear-oblong at their greatest distance from the main rachis. Veins branched.

Sori medial and conspicuous, consisting of two rows near the costa.

The fructification covering the whole under side of the frond. Indusium kidney-shaped and persistent.

Stipes and rachis stout, and covered with numerous scales; stipes twelve inches in length. Lower pinnæ three to four inches in length, central pinnæ six inches.

Length of frond from three to four feet.

For fronds my thanks are due to Mr. Stansfield, of Vale Gardens, Todmorden.

The illustration is from a frond of the original plant, sent by Mr. Stansfield.

SCOLOPENDRIUM VULGARE, Var. Ramo-marginatum.

Moore.

PLATE XXIII.

Scolopendrium—Hart's-tongue. *Vulgare*—Common.
Ramo-marginatum—Margin-branched.

This very singular Fern was raised from spores by Mr. A. Clapham, of Scarborough, a gentleman who has been more successful than any one else in obtaining remarkable varieties of British species from spores. It is exceedingly beautiful, and very distinct.

The lower portion of the frond is very much narrowed, the leafy part being often all but wanting, except at the base itself, where it becomes dilated; above it is ramose, forming multifid-crisped tassels, which are marginate. At the apex the form is that of a large spreading tassel.

Length of the frond usually about nine inches, and width of the apex (that is, of the tassel) about six inches.

There are two forms, the one branching into two distinct fronds at the base.

For the simple form I am indebted to Mr. Stansfield, of Todmorden, and for the double form to Mr. C. Monkman, of Malton, both of whose forms I have figured.

SCOLOPENDRIUM VULGARE, Var. Submarginatum.

Moore.

PLATE XXIV.—A.

Scolopendrium—Hart's-tongue. *Vulgare*—Common.
Submarginatum—Partially margined.

An interesting variety, found in several places in Great Britain and Guernsey.

The fronds, which vary, are frequently bi-furcate or ramose, partially margined, the margin either crenato-lobate, lobate, narrowed and trebly dentate, or truncate and obliquely cornute.

It has a thin skin-like irregular line just beneath the jagged margin of the frond, which, however, is not always continuous.

The sori is bold and lengthy within the skin-like line, having also short sori outside this line.

Length of frond from eighteen to twenty-four inches.

The frond from which the illustration is taken was found at Oldstead, Yorkshire, and kindly communicated by Mr. C. Monkman, of Malton.

SCOLOPENDRIUM VULGARE, Var. Jugosum.

Moore.

PLATE XXIV.—B.

Scolopendrium—Hart's-tongue. *Vulgare*—Common.
Jugosum—Full of ridges.

This singular Fern was found in Guernsey by Mr. James, of Vauvert, and Mr. Jackson.

It differs in having the soriferous veins thickened, and thus producing on the upper surface of the fronds a series of ridges, or leafy sorus-like excrescences.

The length is from twelve to fourteen inches.

There are several forms in cultivation.

For the specimen illustrated I am indebted to Mr. C. Monkman, of Malton.

SCOLOPENDRIUM VULGARE, Var. Crenato-lobatum.

Moore.

Scolopendrium—Hart's-tongue. *Vulgare*—Common.
Crenato-lobatum—Jagged-lobed.

Another interesting variety, found in Guernsey by Mr. C. Jackson; Dorsetshire, by Mr. Wollaston; Oldstead, Yorkshire, by Mr. C. Monkman; Devonshire, by the Rev. J. M. Chanter; and in Kent, by Mr. Brent.

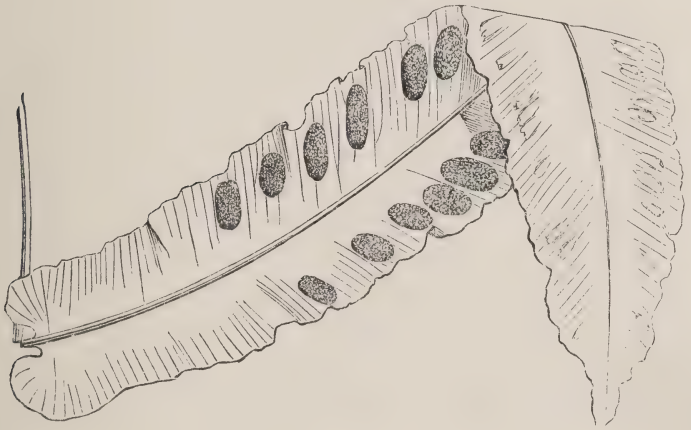
The size and outline of this Fern is normal, sometimes, however, as in the Oldstead examples, being widest at the centre of the frond.

The margin (and more especially in the upper portion) is distinctly crenato-lobate, and occasionally sub-undulated.

Sori abundant and prominent beneath, and distinctly supra-soriferous above, the latter often large.

Length of frond from twelve to fifteen inches.

The specimen illustrated was found at Oldstead, Yorkshire, and communicated by Mr. C. Monkman, of Malton.



SCOLOPENDRIUM VULGARE, VAR. PAPILLOSUM.

MOORE.

Scolopendrium—Hart's-tongue. *Vulgare*—Common.
Papillosum—Bearing protuberances.

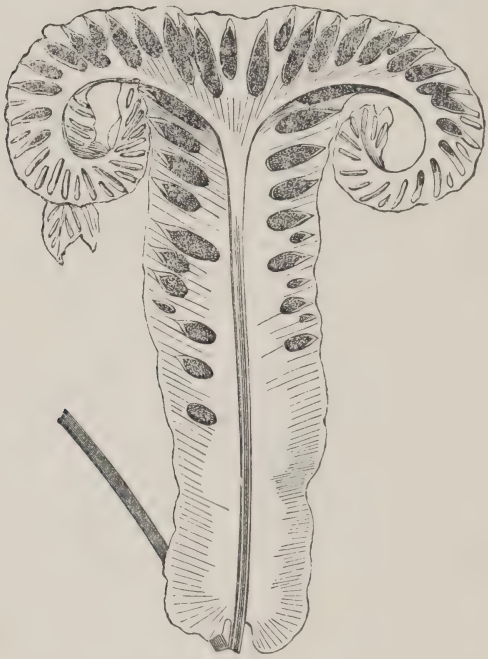
A PRETTY, curious Fern, discovered in Guernsey, by Mr. Jackson.

The distinctive feature is a series of distinct wart-like excrescences on the upper surface of the frond, near the margin, forming a kind of border.

Sori oval.

Length from six or eight inches to eighteen inches.

For the frond illustrated I am indebted to Mr. Stansfield, of Todmorden.



SCOLOPENDRIUM VULGARE, VAR. VARIABILE.

MOORE.

Scolopendrium—Hart's-tongue. *Vulgare*—Common.
Variabile—Variable.

A VERY variable Fern, both in size and form.

Found in several localities.

The fronds either consist of two distinct reniform-stalked lobes or branches, or one reniform lobe and a longer branch, or destitute of the reniform lobe. The branch usually divided into one or two round lobes, sometimes multifid at the apex.

Length of frond from nine to eighteen inches.

The specimen for illustration was obligingly furnished by Mr. C. Monkman, of Malton.

PTERIS CRETICA, Var. Albo-lineata.

Hooker.

PLATE XXV.

Pteris bicolor, London Nurserymen.

Pteris—Brake. *Cretica*—Cretan. *Albo-lineata*—White-lined.

There are now several variegated-fronded Ferns in cultivation. We have already described and figured *Pteris aspericaulis, var. tricolor,* a magnificent Fern, requiring careful attention, and a close warm stove; and *Pteris argyrea,* another beautiful Fern, of large size, but only bearing a few fronds at the same time; and now we have the *Pteris cretica, var. albo-lineata,* which, with very little management, produces a handsome specimen.

Introduced into England in 1860, having been received from the Botanic Gardens of Java.

Very dwarf in habit, bearing from thirty to fifty fronds at the same time, which remain for a length of time in perfection. The sterile fronds are smaller than the fertile ones, and the pinnæ are broader, the former being from eight to twelve inches, and the latter from fourteen to twenty inches long.

The form is the same as in the *Pteris cretica,* being pinnate, with usually three pairs of lanceolate-sessile pinnæ, and a terminal much longer one. The longer pair of pinnæ are bifid, producing on their lower side a secondary pinnule of about one-half their own length, the next pair sometimes producing on their lower side a lobe.

The sterile fronds, as well as the sterile portion of the fertile fronds, are spinulose-serrate.

The colour is green, with a broad belt of a whitish colour down the centre of each pinna, occupying one-half the width of the frond.

Mr. Crocker, who has the management of the Ferns at the Royal Gardens, Kew, has raised some hundreds of plants from spores, and every one are quite true, not a single normal green frond to be seen amongst them.

My thanks are due to Mr. Smith, the Curator of the Royal Gardens, Kew, for the fronds from which the present illustration was produced.

Fertile Pinna—under side.

CHEILANTHES CAPENSIS.

Swartz. Moore.

PLATE XXVI.—A.

Cheilanthes prætexta,	Kaulfuss.
Adiantum Capense,	Thunberg.
Adiantopsis Capensis,	Fee.
Hypolepis "	Hooker.

Cheilanthes—From the Greek, a lip and a flower. *Capensis*—Cape of Good Hope.

In the Section Adiantoidea.

An exceedingly pretty dwarf Fern, with characters partaking of *Cheilanthes, Hypolepis,* and *Adiantum.* In habit and nature it is very dissimilar to either *Cheilanthes* or *Hypolepis,* and indeed no nearer allied to *Adiantum,* in all three of which families it has been placed by various authorities. It is rare in cultivation in this country.

An evergreen greenhouse species.

Native of the Cape of Good Hope.

The fronds, which are membranaceous and glabrous, are deltoid and bi-tripinnate; the pinnules obovate and decurrent.

Sori approximate, membranaceous, copious, and semiovate, giving the edge of the frond an *Adiantum* look.

Stipes from four to six inches in length, and rachis four inches. Stipes slender, ebeneous, and polished; colour reddish brown; base slightly scaly.

Caudex creeping and scaly.

Veins slender and forked.

For fronds my thanks are due to Mr. Downes, of Hillsboro Terrace, Ilfracombe.

The illustration is from Mr. Downes' frond.

POLYPODIUM VULGARE, Var. Cristatum.

Perry, M.S.

PLATE XXVI.—B.

Polypodium—Polypody. *Vulgare*—Common. *Cristatum*—Crested.

This very beautiful Fern is as yet rare in cultivation.

It was discovered in Ireland by Mr. Henry S. Perry, of Rock Lodge, Monkstown, County Cork.

Like *Aspidium filix-mas, var. cristata,* the present plant has multifid or tasseled apices on each pinna, the midrib of the frond dividing and branching about an inch below the apex of the frond, as well as the mid-vein of each pinna about a quarter of an inch below the apex of each pinna.

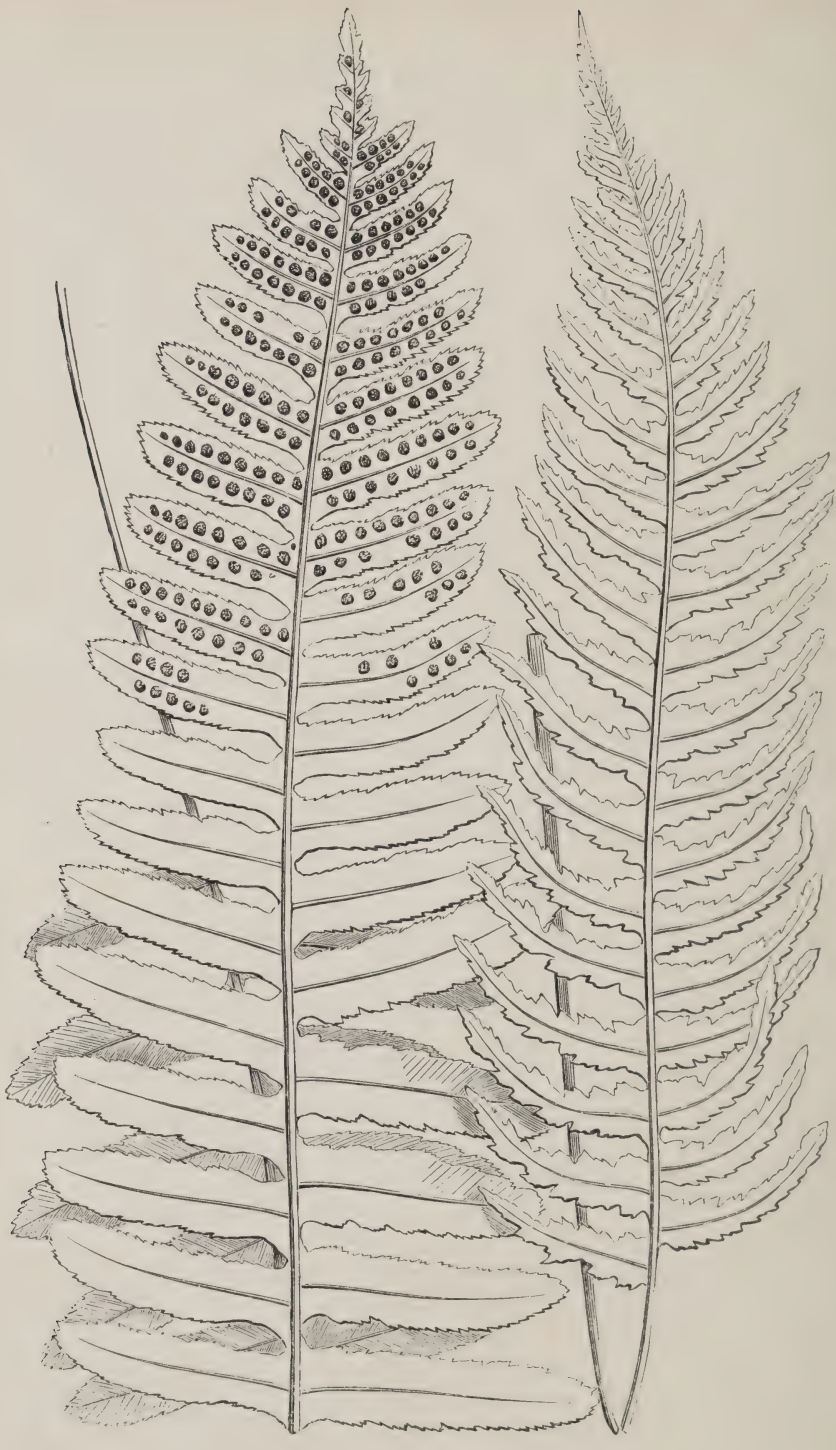
Sori large and prominent.

Mr. R. Sim, of Foot's Cray, purchased the stock of this very distinct Fern, from whom it can be procured.

For a description of *Polypodium vulgare,* the reader is referred to page 111, vol. i, of my "Natural History of British and Exotic Ferns." The present variety, from the points of each frond being branched and crested, and all its divisions terminating in crested tufts, so as to form a frilled margin, is both distinct and beautiful.

My thanks are due to Mr. Perry, the discoverer, for fronds of this variety.

The illustration is from Mr. Perry's frond.



Polypodium Vulgare, Var. Truncatum. Var. Marginatum.

POLYPODIUM VULGARE, Var. Truncatum.

Moore.

Polypodium—Polypody. *Vulgare*—Common. *Truncatum*—Truncated.

An interesting variety, well worthy of cultivation. Rare.

Discovered at Windermere, by Mr. Clowes.

In this variety the lobes are profoundly serrated, the lobules being minutely serrated.

The fronds are occasionally truncate, the leafy portion being absent, and the veins projecting so as to form irregular points.

The pinnæ are alternate.

Length twelve inches, or more.

The frond for illustration was kindly forwarded by Mr. Clowes, of Windermere.

POLYPODIUM VULGARE, Var. Marginatum.

Polypodium—Polypody. *Vulgare*—Common. *Marginatum*—In reference to the margin.

A distinct variety.

This Fern differs in having the epidermis of the under surface of the frond split away, as it were from the margins of the lobes, and receding towards the mid-vein.

Variety *Marginatum* is very rare.

My thanks are due to Mr. Monkman, of Malton, for the frond which is here figured.

ASPIDIUM ANGULARE, Var. Cristatum.

Lowe.

PLATE XXVII.

Polystichum angulare, var. *cristatum*, Moore.

Aspidium—Shield Fern. *Angulare*—An angle. *Cristatum*—Crested.

In the Section Polystichum of Authors.

Another beautiful variety of a British species, which in its general features resembles the crested forms of *Aspidium filix-mas* and *Asplenium filix-fœmina*. During the last three or four years great progress has been made in the raising from spores of varieties of the British Ferns, many of which are so dissimilar as to be scarcely recognised as belonging to the parent from which they have sprung. Their beauty and distinctness will quite revolutionize the English ferneries, and, being hardy, is a matter of the greatest moment to cultivators of these charming plants. From the present varieties will spring countless other varied forms, as, although it is with the greatest difficulty that a variety can be raised from the normal form, nevertheless it is comparatively easy to multiply endless forms when they are raised from the spores of the varieties. In the normal forms the fronds are more or less alike, whilst in the varieties they have a tendency to differ, and the plan to be adopted is to save spores from those fronds which are the most beautiful and distinct; from these, plants will spring up that will amply repay the care and attention requisite in their cultivation.

The present variety was first discovered near Bristol, by Mr. Hillman, and subsequently in Devonshire, by the Rev. J.

M. Chantin and Mr. Wollaston, and in Somersetshire, by Mr. Elworthy.

The apices of the fronds branch out into multifid curly tufts, whilst the apices of the pinnæ, though less developed than those of the fronds, also end in multifid curly tufts.

The pinnæ are opposite below and alternate above, in short, the frond in other respects bears a strong resemblance to the normal form.

For fronds my thanks are due to Mr. Monkman, of Malton

The illustration is from Mr. Monkman's frond.

ASPIDIUM FILIX-MAS, Var. Abbreviatum-cristatum. Lowe.

PLATE XXVIII.

Lastrea Filix-mas abbreviata-cristata, Clowes.

Aspidium—Shield Fern.
Filix-mas—Male Fern. *Abbreviatum-cristatum*—Abbreviated-crested.

In the Section Lastrea of Authors.

This new multifid variety of the Male Fern, although not so dwarf as the *Aspidium pumilum*, (figure 15, vol. vi. of my "Natural History of British and Exotic Ferns,") is nevertheless of dwarf compact habit, and an interesting addition to our hardy Ferns.

It was found in Borrodale, Cumberland, by Mr. R. D. Harrison.

The pinnæ are opposite below and sub-opposite above, distant, and from an inch and a half to two inches in length, their apices being branched and tasselled. The pinnules are opposite.

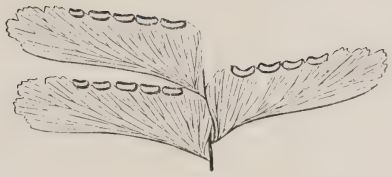
The midrib very scaly.

Sori usually one on each pinnule, and in the larger and broader pinnules two, the whole forming a single line close to the midvein.

Length of frond from twelve to eighteen inches.

For a frond of this beautiful and rare Fern I am indebted to Mr. Clowes, of Windermere.

The illustration is from Mr. Clowe's frond.



Portion of fertile Frond—under side.

ADIANTUM WILESIANUM.

Hooker. Fee. Moore.

PLATE XXIX.

Adiantum crenatum? Willdenow.

Adiantum—Dry. *Wilesianum*—Named after Mr. Wiles, the discoverer of the Fern in Jamaica.

An interesting species, well worthy of general cultivation.

An evergreen stove Fern.

Native of Jamaica and Mexico.

The fronds are large, quadripinnate, with lanceolate-acuminate pinnæ, which are distant; pinnules ovate-lanceolate, falcate, base obliquely wedge-shaped, superior base truncate. Upper margin crenato-lobate. Pinnules alternate.

Sori situated in the crenature or sinus of the lobe; indusium reniform; sori about five, sometimes six, on each pinnule.

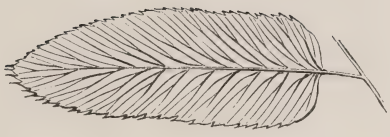
Stipes ebeneous, glabrous, and shining.

Rachis on under side pubescent.

Colour of frond dark brown green.

For fronds my thanks are due to Mr. J. Smith, Curator of the Royal Gardens, Kew.

The illustration is from one of Mr. Smith's fronds.



Barren Pinna.

CERATODACTYLIS OSMUNDIOIDES.

J. Smith. Fee.

PLATE XXX.

Llavea cordifolia,	Lagasca. Hooker, (*not* Liebmann.)
Allosorus Karwinskii,	Kunze. Bentham. Hooker.
Botryogramme "	Fee.

Ceratodactylis—From *Keras*—a horn, and *dactylos*—a finger, alluding to the divisions of the fronds. *Osmundioides*—Osmunda-like.

A very handsome, delicate-fronded, *Osmunda*-looking Fern.

An evergreen stove species.

Native of Mexico.

Fronds large and tripinnate, the fertile and sterile pinnules different. Sterile pinnules ovate-cordate, thin but firm, having a thickened narrow margin; the veins closely pinnated and forked, the margin finely spinulose-serrate; fertile pinnules, which are situated only on the upper portion, forming a panicle, are narrow, elongated, nearly terete, the margins membranaceous, involute, and forming the involucres.

Caudex brief, stout, flexuous, and scaly, stipes long, flexuous, slender, and scaly; rachis flexuous and slender.

Sori linear-oblong, and occupying nearly the entire length of the pinnated veins of the upper pinnules of the frond.

A large rambling-habited Fern, if not scandent.

A solitary species in this genus, very distinct.

My obligations are due to Mr. J. Smith, Curator of the Royal Gardens, Kew, for the fronds illustrated.

GYMNOGRAMMA [illegible]

XXXI

Portion of barren Frond—under side.

GYMNOGRAMMA TRIFOLIATA.

DESVAUX. J. SMITH. SPRENGEL. MOORE.

PLATE XXXI.

Acrostichum trifoliatum,	LINNÆUS.
Hemionitis trifoliata,	HUMBOLDT.

Gymnogramma—Naked writing, in allusion to the sori.
Trifoliata—Three-leaved.

A BEAUTIFUL golden-powdered Fern, rare in cultivation.

Native of the West Indies and South America.

Fronds pinnate, pinnæ linear, from two to three inches in length; sterile fronds everywhere very smooth; basal pinnæ trifoliate, higher on the frond usually bifoliate, opposite or subopposite; pinnæ short-stalked.

Stipes and rachis reddish.

Veins forked.

Sori along the veins, naked, and eventually confluent.

Length of frond about two feet; above dark green, beneath densely covered with a pale greenish yellow powder.

Sprengel remarks in his description of this Fern, that it is white-powdered beneath, but all the fronds which I have seen have been yellow-powdered.

For fronds I am indebted to Mr. J. Smith, Curator of the Royal Gardens, Kew, and to Mr. R. J. Gray, of St. Thomas', Exeter.

The illustration is from Mr. Smith's frond.

Barren Pinna.

ANEMIA ADIANTIFOLIA.

SWARTZ. MOORE. WILLDENOW. SPRENGEL. DESVAUX. KUNZE. PRESL. KLOTZSCH, (*not of* SCHLECHTENDAL.)

PLATE XXXII.

Anemia cicutaria,	MOORE AND HOULSTON, (*not of* KUNZE.)
" *caruifolia,*	PRESL. SPRENGEL.
" *asplenifolia,*	SWARTZ.
Osmunda adiantifolia,	LINNÆUS.
" *asplenifolia,*	LAMARCK.
Anemirhiza adiantifolia,	J. SMITH.
Ornithopteris "	BERNHARDI.
Anemia adiantifolia, var. *caruifolia,*	MOORE.
" " var. *asplenifolia,*	WILLDENOW.

Anemia—From the Greek, naked, in reference to the naked inflorescence.
Adiantifolia—Maidenhair-leaved.

AN exceedingly handsome Fern.

An evergreen stove species.

Native of the West Indies—in Jamaica, Cuba, St. Domingo, Bahamas, Porto Rico, and Guadeloupe; South America—in Mexico, Guatemala, and Tabasco.

Fronds bipinnate, except at the base, where tripinnate. Pinnæ, two together at the base of the frond, then alternate, apex of the frond attenuate. Pinnules, basal ones deeply divided, wedge-shaped at the base, and sharply dentate on the margin, the other pinnules acutely wedge-shaped at base, their apices rounded. Fertile frond tripartite, the two opposite segments contracted, erect, constituting two sporangiferous racemes. The pair of fertile pinnæ at the base of the frond are situated on long slender stalks, and usually there is a third fertile pinna situated immediately above with a sterile pinna, the rest of the pinnæ being barren.

Rachis and stipes very slender, and copiously hirsute. Pinnules also hirsute.

Length of frond twelve inches.

Veins forked and free.

Sporangia oval, attached to the base, opening vertically on the exterior side.

I am indebted to Mr. J. Smith, of the Royal Gardens, Kew, for the fronds from which the present illustration has been made.

Portion of fertile Frond—under side.

POLYPODIUM PLEBEJUM.

SCHLECHTENDAL. J. SMITH. LIEBMANN. KUNZE.

PLATE XXXIII.

Polypodium—Polypody. *Plebejum*—Common.

AN interesting rare species.

An evergreen stove Fern.

Native of Mexico, where it has been found in the temperate and cold regions, at a height of from two to seven thousand feet above the sea, by Schiede and Liebmann.

In form it is very like *Polypodium vulgare.*

The peculiar feature of this handsome Fern is that the under side is dotted over with conspicuous brown scales, which are a great contrast on the pale green of the frond.

Length of frond ten inches; width two inches and three-quarters. Colour bright bluish green.

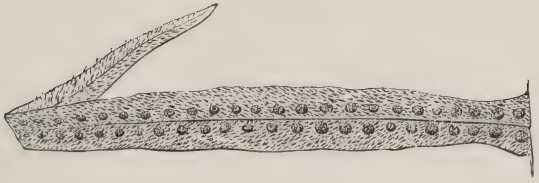
Round the edge of the frond there is a thickened rim, and on the upper side, along the margin, there is a row of circular white scales.

Sori a single row on each side the midrib, very large, reddish, usually about ten or twelve pairs; eventually confluent and joining each other.

The frond for illustration was kindly communicated by Mr. J. Smith, Curator of the Royal Gardens, Kew.

POLYPODIUM SQUAMATUM.

XXXI



Pinna of fertile Frond—under side.

POLYPODIUM SQUAMATUM.

Linnæus. Plumier.

PLATE XXXIV.

Lepicystis squamata, J. Smith.

Polypodium—Polypody. *Squamatum*—Scaly.

In the Section Lepicystis of Authors.

There are several species which Mr. Smith has formed into a genus, under the name of *Lepicystis*. They consist of the *Polypodium incanum* of Swartz, the *Polypodium sepultum* of Kaulfuss, and the *Polypodium squamatum* of Linnæus, (the present species.) These species have pinnatifid fronds, which are densely squamose. The veins are anastomosing, the lower exterior venule of each fascicle being free, and bearing the sporangia on its apex, within the costal areoles. The sori are circular, and protrude through the dense squamæ.

The *Polypodium squamatum* is very handsome, and rare in cultivation.

An evergreen stove species.

Native of the West Indies.

Fronds pinnatifid. Pinnæ narrow, lessening to the apex, where pointed; alternate below, and opposite above; very hirsute above and below, approximate, and usually fifty pairs.

Sori a single row on either side the midrib, small, reddish, and usually about thirty pairs.

Length of frond about thirty-three inches, the lowest six inches being naked. Width of frond eight inches in the widest part. Colour rich green above, and whitish below.

For fronds my thanks are given to Mr. J. Smith, Curator of the Royal Gardens, Kew.

Apex of Frond.

POLYPODIUM PHEGOPTERIS, Var. Multifidum.

Lowe.

Polypodium—Polypody. *Phegopteris*—Beech Fern.
Multifidum—Multifid.

This interesting variety was found by myself in great abundance in 1857, near Stockghyll Force, Ambleside.

In form it resembles the normal form of *Polypodium phegopteris*, the distinctive feature consisting in its being irregularly multifid.

SCOLOPENDRIUM VULGARE, Var. Fissile.

Scolopendrium—Hart's-tongue. *Vulgare*—Common. *Fissile*—Split.

A handsome form of the above Fern.

Discovered at Castle Howard, by Mr. C. Monkman.

A dwarf Fern, and a very irregular-edged variety, with a beautifully cut margin.

Sori small; sometimes supra-soriferous.

Length of frond from nine to twelve inches.

My thanks are due to Mr. C. Monkman, of Malton, for the frond illustrated.

SCOLOPENDRIUM VULGARE,

Variety Submarginatum-multifidum.

Scolopendrium—Hart's-tongue. *Vulgare*—Common.
Submarginatum—Submarginal. *Multifidum*—Multifid.

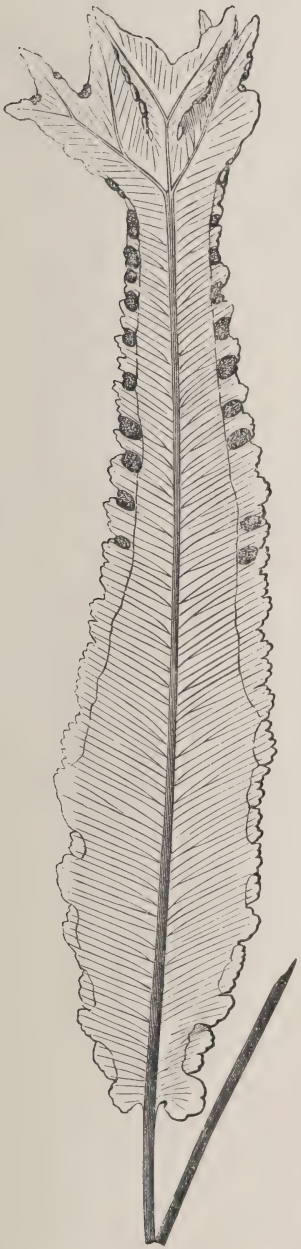
A dwarf Fern raised by Mr. Stansfield, of the Vale Gardens, Todmorden.

Fronds irregular and submarginal, their apices multifid into compact divisions.

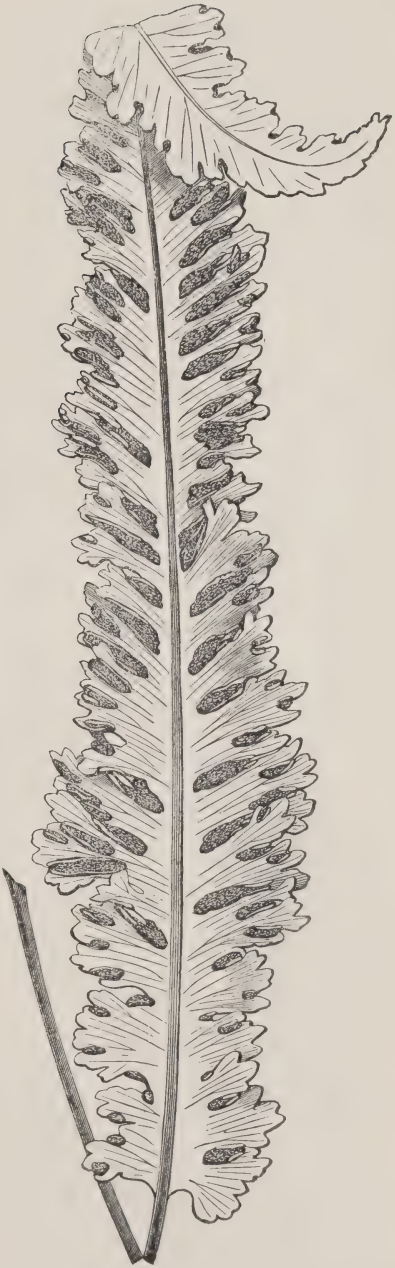
Sori small, almost circular.

Length of frond from eight to nine inches.

My thanks are due to Mr. Stansfield, of Todmorden, for the frond illustrated.



SCOLOPENDRIUM VULGARE.
Var. Fissile.



SCOLOPENDRIUM VULGARE.
Var. Submarginatum-multifidum.

Portion of fertile Frond—under side.

LYGODIUM FORSTERI.

Lowe.

PLATE XXXV.

Lygodictyon Forsteri,	J. Smith.
Lygodium reticulatum,	Schkuhr.
Hydroglossum polycarpus,	Willdenow.
Ophioglossum scandens,	Forster, (*not* Linnæus.)

Lygodium—From *lygodes,* flexible, in allusion to the twining habit of the plants. *Forsteri*—Named after Forster.

In the Section Lygodictyon of Authors.

This charming climbing-habited plant differs from all other species in having its venation reticulated. Mr. Smith has, on this account, separated it, and formed a new genus, which he has called *Lygodictyon.* It is rare in cultivation.

A warm greenhouse species.

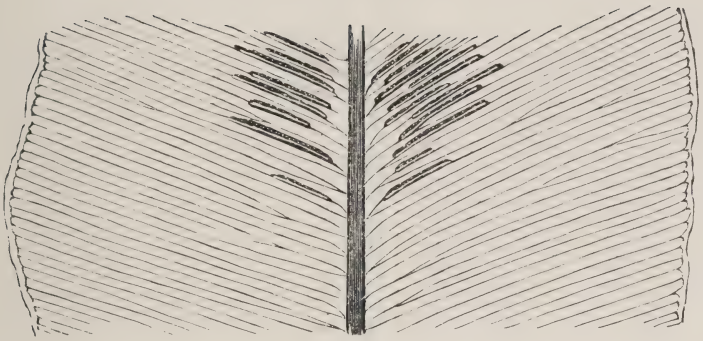
Native of the Polynesian Islands.

In general habit it is similar to the *Lygodium*, in which family it was placed by Schkuhr.

Fronds scandent, twining, and conjugate; usually three (sometimes four) pairs of pinnæ, with an ultimate double pinna, (which is sometimes single.) Pinnæ broadest at the base, and narrowing to the apex; an inch and a half in length, and thin in texture. Colour bright green.

Sori consisting of indusiate cysts, making an interesting row of spore-cases beyond the margin of the frond.

For the fronds illustrated my thanks are due to Mr. J. Smith, Curator of the Royal Gardens, Kew.



Portion of fertile Frond—under side.

ASPLENIUM NIDUS.

LINNÆUS. HOOKER. WILLDENOW. (*Not of* BROWN, RADDI, WALLICH, MUELLER, *or* MORITZ.)

PLATE XXXVI.

Neottopteris nidus,	J. SMITH. HOOKER. FEE.
Thamnopteris nidus,	PRESL. MOORE.
" *orientalis,*	PRESL.
" *Mauritiana,*	PRESL.

Asplenium—Spleenwort. *Nidus*—A nest, in allusion to the manner of growth.

IN THE SECTION THAMNOPTERIS OF AUTHORS.

ACCORDING to our leading botanists several somewhat similar Ferns in some respects, but differing considerably in others, may be considered as forms of the same Fern, and that Fern the *Asplenium nidus.* These consist of the following:—

Asplenium nidus, Linnæus, with fronds from two to six feet long; *A. musæfolium*, Mettenius, with fronds from four to six feet long, and one foot broad; *A. Australasicum*, Hooker, with fronds from two to six feet long.

In *A. nidus* the frond is usually narrower. In *A. musæfolium* the great size, and especially breadth of this simple or undivided frond, makes it, as Sir W. J. Hooker says, "unquestionably the most noble of all the genus *Asplenium*." *A. Australasicum*, which is distinguished by the very acute keel to the costa, is the form figured in my "Natural History of Ferns," Vol. V, plate XV.—A, under the name of *A. nidus*, and this Fern must therefore be called the *A. nidus var. Australasicum;* the present species being the normal form of *A. nidus*.

An evergreen stove Fern.

Native of the East Indies—Malay Islands, Mauritius, Elizabeth Island, Oahu, Sandwich Islands, Society Islands, China, Chusan, Bonin Isles, Australia, Norfolk Island, and Madagascar.

Fronds ample, spathulato-lanceolate, acuminate at the apex, and tapering to the base; decurrent on a brief stipes. Costa semiterete at the back.

Sori extending from the costa to about half-way towards the margin.

For fronds my thanks are due to Mr. J. Smith, Curator of the Royal Gardens, Kew.

Fertile pinna—under side.

LOMARIOPSIS LONGIFOLIA.

J. Smith.

PLATE XXXVII.

Lomaria longifolia, Kaulfuss. Sprengel.
Acrostichum sorbifolium, Vahl, (*Not of* Linnæus.)

Lomariopsis—From *loma*, the edge, and *opsis*, appearance, in allusion to the marginal gland. *Longifolia*—Long-fronded.

An interesting rare Fern.

A stove species.

Native of Tropical America, Martinique, and Porto Rico.

Fronds dimorphous and pinnate; the pinnæ articulate with the rachis. The fertile pinnæ contracted, sub-opposite below, alternate above, from six to ten pairs and a terminal one; length of pinnæ six inches, breadth one inch and a half; oblong-lanceolate in form, pointed at the apex, cuneate at the base, and paler underneath.

Veins uniform, part simple and part forked, direct, parallel, free, and conspicuous.

Fertile pinna smaller and narrow, sporangiferous, on the under side covering the whole frond; length three inches and a half; breadth not half an inch; margin membranous, narrow, and sub-indusiform.

Sori superficial, and without an indusium.

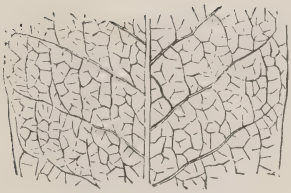
Length of frond two feet.

Rhizoma scandent.

A similar genus to *Stenochlæna*, as regards its habit, but differing in the absence of the costal areolæ, and of the marginal gland near the base of the pinnæ.

For fronds my thanks are due to Mr. J. Smith, Curator of the Royal Gardens, Kew.

The illustration is from fronds sent by Mr. J. Smith.



Portion of barren Frond.

NIPHOPSIS ANGUSTATUS.

Smith.

PLATE XXXVIII.—A.

Niphobolus sphærocephalus,	Hooker and Greville.
" *macrocarpus,*	Hooker and Arnott.
" *angustatus,*	Sprengel. Moore.
Polypodium angustatum,	Swartz. Schkuhr.
" *sphærocephalum,*	Wallich.
Pleopeltis angustata,	Presl.
Phymatodes sphærocephalus,	Presl.

Niphopsis—Snowy appearance, (from the Greek,) in allusion to the stellate pubescence. *Angustatus*—Narrow-fronded.

A pretty, rare Fern.

An evergreen stove species.

Native of the Malay Archipelago.

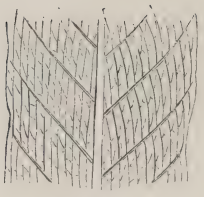
Fronds simple, linear-lanceolate, opaque, coriaceous, and densely covered with a reddish stellate pubescence; sometimes the apex of the frond is bifid.

Veins compound anastomosing, internal, and obscure; primary veins indistinct.

Sori oval, large and bold, and transverse-uniserial, about thirty pairs on each frond, reddish in colour, and conspicuously visible on the upper side of the frond.

Length fifteen inches; fertile frond narrower.

The illustration is from fronds kindly forwarded by Mr. J. Smith, Curator of the Royal Gardens, Kew.



Portion of Frond.

NIPHOBOLUS GARDNERI.

J. Smith. Kunze. Moore.

PLATE XXXVIII.—B.

Niphobolus acrostichoides, J. Smith. (*Not of* Forster.)
Polypodium Gardneri, Mettenius.

Niphibolus—From *niphobolos*, covered with snow, in allusion to the stellate pubescence. *Gardneri*—Named after Gardner.

A fine stove Fern.

Native of Ceylon.

Frond simple, linear-lanceolate, apex pointed, thick, pubescent with a reddish pubescence.

Veins internal and obscure; pinnate from a central costa; venules anastomosing.

Sori non-indusiate, circular, multiserial, confluent, and eventually covering the whole under side of the frond except the base.

Length of frond fifteen inches.

Rhizoma creeping.

My thanks are due to Mr. J. Smith, of the Royal Gardens, Kew, for fronds from which the present illustration has been made.

SCOLOPENDRIUM VULGARE, Var. Stansfieldii.

Stansfield, M.S.

PLATE XXXIX.—A.

Scolopendrium—Hart's-tongue. *Vulgare*—Common.
Stansfieldii—Named after the successful raiser of many varieties of British Ferns, Mr. Stansfield.

This magnificent, and, as yet, very rare variety, was raised from spores in the fernery of Messrs. Stansfield, of Todmorden, in the year 1859. It is quite constant, and when the fronds are in perfection, it is the most beautiful of all the varieties of this protean species.

The fronds are densely undulated, in the manner of *Scolopendrium vulgare, var. crispum;* the undulations, however, in the variety *Stansfieldii* are lobed and profoundly laciniated, the projections being long-pointed and variously crisped and twisted, giving the whole frond the singular appearance of a *fringed frill,* if it is allowable to use this pleonastic phrase.

The stipes is from two to three inches in length, and the fully-grown fronds twelve inches or more long, and about two inches broad.

My thanks are due to Messrs. Stansfield, of the Vale Gardens, Todmorden, for the frond illustrated.

Portion of fertile Frond—under side.

SCOLOPENDRIUM VULGARE,

Var. Marginato-irregulare.

Clapham.

PLATE XXXIX.—B.

Scolopendrium—Hart's-tongue. *Vulgare*—Common.
Marginato-irregulare—Irregular-margined.

An interesting and desirable variety of our English *Scolopendrium vulgare*, raised by Mr. Clapham, of Scarborough, a gentleman well known for the many remarkable varieties he has added to our British Ferns.

The present species is most variable, the fronds being irregularly margined, and their apices multifid.

So variable is the form of the fronds of this Fern, that no two are alike.

Length from nine to twelve inches.

For the fronds illustrated I am indebted to Mr. Clapham, of Scarborough.

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ASPLENIUM FILIX-FŒMINA, Var. Acrocladon.

Clapham, M.S.

PLATE XL.

Asplenium—Spleenwort. *Filix-fœmina*—Lady Fern.
Acrocladon—From the Greek, branching at the extremity.

In the Section Athyrium of Authors.

An extremely handsome variety of the Lady Fern, raised by Mr. Clapham, of Scarborough.

In habit and general appearance this variety partakes more of the character of the variety "*Corymbiferum*," found in the Channel Islands, than of any other; the multifid apices, are however, much more finely cut and divided.

Length of frond twelve inches. Colour pale green.

The frond illustrated was kindly sent by Mr. Clapham, of Scarborough.

Apex of Frond.

ASPIDIUM OREOPTERIS, Var. Nowellianum.

Lowe.

Lastrea montana, var. Nowelliana, Moore.

Aspidium—The Shield Fern. *Oreopteris*—Mountain Fern.
Nowelliana—Named after Mr. Nowell, one of the discoverers.

In the Section Lastrea of Authors.

The *Lastrea montana* is one of the least variable of the British Ferns, and this variety is by far the most extraordinary hitherto discovered. It was found by Mr. J. Nowell, and Mr. A. Stansfield, of Todmorden, near Lake Gyrionedd, in North Wales, September 12th., 1860, and has been tested this season in the fernery at the Vale Nurseries, Todmorden, and proves perfectly constant.

The fronds are pinnate, the pinnæ linear, very narrow, and terminating much more abruptly than in the normal species. The rachis or midrib of the frond frequently terminates in a horn-like projection near the apex of the frond.

The pinnules are very short, generally only about one-third of the length of those in the ordinary form; they are deeply cut and serrated, and in this respect the variety *Nowelliana* differs entirely from the normal type, and indeed has quite as much the appearance of an *Athyrium* as a *Lastrea*.

The sori, bold and conspicuous.

The fronds are from twelve to twenty-four inches in length.

For a description of this Fern the reader is referred to *Aspidium oreopteris* of Swartz, section *Lastrea*, page 53, vol. vi, of my "Natural History of British and Exotic Ferns."

My thanks are due to Messrs. Stansfield, of Todmorden, for the frond illustrated.

ASPIDIUM DELTOIDEUM.

XLI

Pinna of mature Frond--under side.

ASPIDIUM DELTOIDEUM.

Swartz.

PLATE XLI.

Lastrea deltoidea, Moore.

Aspidium—Shield Fern. *Deltoideum*—Deltoidal.

In the Section Lastrea of Authors.

A singular-looking Fern, as yet rare in cultivation.

An evergreen stove species.

Native of the West Indies, and imported from Jamaica.

The fronds, which are stiff, are erect, smooth, thickish-textured, and pinnate; the pinnæ on the lower half of the frond are very small and deltoidal, descending, and making the lower half of the frond remarkably narrow; the pinnæ on the upper half of the frond very large in proportion to those below, ascending, profoundly pinnatifid, and narrowing to the apex. Pinnæ at the base, and also upper portion of the frond, rounded at the apex, the large pinnæ pointed. The largest pinnæ four inches in length, below where deltoid only half an inch. Stem very hirsute; base scaly.

Rhizoma very slow creeping, (decumbent,) and stout.

Veins forked.

Length of frond from nine to twelve inches. Colour deep green.

For the frond illustrated my thanks are due to Mr. R. Sim, Nurseryman, Foot's Cray, Kent.

XIPHOPTERIS SERRULATA (GRAMMITIS.)

Kaulfuss.

PLATE XLII.—A.

Acrostichum serrulatum,	Swartz.
Grammitis serrulata,	Hooker.

Xiphopteris—From the Greek, Sword Fern. *Serrulata*—Saw-edged.

A most singular little Fern; rare in cultivation.

An evergreen stove species.

Native of the West Indies, and imported from Jamaica.

The barren and fertile fronds different, the latter longer, and the apices, which alone are fertile, a little flattened out in breadth; the soriferous part of the fertile frond minute.

Rhizoma tufted, spreading by its filiform stolons, by which means it is increased.

Length of sterile frond one inch and a half; of fertile frond three inches; width one-sixteenth of an inch.

For fronds my thanks are due to Mr. R. Sim, of Foot's Cray, Kent.

Pinna of mature Frond.

MOHRIA THURIFRAGA, Var. Achilliæfolia.

Moore.

PLATE XLII.—B.

Mohria—Named after Mohr, a German botanist.
Thurifraga—Frankincense. *Achilliæfolia*—Achillia-leaved.

A most beautiful variety of the *Mohria thurifraga*, (figured on Plate LXX, vol. viii, of my "Natural History of British and Exotic Ferns,") having the barren fronds from four to six inches in length, and the fertile fronds from six to nine inches, the barren being two inches, and the fertile from two inches and a half to three inches wide. The lower parts of the fertile fronds (which are erect) are like the barren ones, the upper part alone being fertile, and much like the fertile frond of the normal form of *Mohria thurifraga*.

Rhizoma slow creeping.

One of the greatest proofs that this charming Fern is only a variety of *M. thurifraga*, is that spores carefully saved and sown have only produced the ordinary form of *M. thurifraga*.

For a plant my thanks are due to Mr. Henderson, of Wentworth; and for the fronds illustrated, to Mr. R. Sim, of Foot's Cray.

ASPIDIUM CARYOTIDEUM.

Pinna of fertile Frond—under side.

ASPIDIUM CARYOTIDEUM.

Wallich.

PLATE XLIII.

Cyrtomium caryotideum, Moore.

Aspidium—Shield Fern. *Caryotideum*—.....?

In the Section Cyrtomium of Authors.

A handsome rare Fern, said to be as large as *Cyrtomium falcatum.*

An evergreen stove species.

Native of the East Indies.

Raised from spores by Mr. Nilson Saunders, of Reigate, Treasurer of the Royal Horticultural Society.

Fronds pinnate; two ascending pinnæ, and a wider ultimate one. Habit similar to that of *Cytomium falcatum.*

Rhizoma erect and brown-scaled.

Length of frond twenty-four inches; length of pinnæ from four to six inches.

The fronds for illustration were forwarded by Mr. R. Sim, Nurseryman, Foot's Cray, Kent.

Pinna of mature Frond.

ASPLENIUM FOLIOLOSUM.

Wallich.

PLATE XLIV.

Athyrium foliolosum,	Moore.
Asplenium macrocarpum,	Blume. Hooker. J. Smith. (*Not of* Desvaux, Fee, *or* Telfair.)
" *decipiens*,	Mettenius.
Aspidium foliolosum,	Wallich.
" *dubium*,	Wallich.
" *fimbriatum*,	Wallich.
" *squarrosum*,	Wallich.
" *lanceum*,	Kunze.
Polystichum fimbriatum,	Presl.
Lastrea macrocarpa,	Moore.

Asplenium—Spleenwort. *Foliolosum*—Leafy.

In the Section Athyrium of Authors.

A distinct, rare species.

An evergreen stove Fern.

Native of the East Indies, Java, and Ceylon.

Raised at Foot's Cray, from East Indian spores.

Fronds bipinnate, subcoriaceous, and glabrous, with ovate-lanceolate, lax-habited, almost pendant fronds, which are stout

in texture, shining, and smooth. Stipes longish. Pinnules sessile; apex obtusely crenate.

Rhizoma stout, erect, and clothed with dark brown scales.

Length of frond from twelve to eighteen inches; width about six inches. Length of pinnæ about three inches.

Sori serial and large.

For fronds I am indebted to Mr. R. Sim, of Foot's Cray, Kent.

GYMNOGRAMMA RUTÆFOLIA.

ASPIDIUM ANGULARE
Var. Truncatum

Mature Frond—under side.

GYMNOGRAMMA RUTÆFOLIA.

Desvaux. Hooker and Greville. Moore.

PLATE XLV.—A.

Gymnogramme rutæfolia,	J. Smith.
Grammitis rutæfolia,	R. Brown.

Gymnogramma—Naked writing, in allusion to the sori.
Rutæfolia—Rue-leaved.

A curious dwarf Fern, having somewhat the appearance of our British *Asplenium ruta-muraria.*

An evergreen greenhouse species.

Native of Australia.

Raised from spores both by Mr. Joseph Henderson, of Wentworth, and Mr. Young, of Taunton.

The fronds are simple, hirsute, and pinnate, having flabellato-cuneate pinnæ, lobed and cuneated.

Length of frond from two to three inches.

Sori in several lines, sometimes forked on either side of the small pinnæ.

For a plant and fronds my thanks are due to Mr. Joseph Henderson, of Wentworth, Yorkshire.

ASPIDIUM ANGULARE, Var. Truncatum.

Lowe.

PLATE XLV.—B.

Polystichum angulare, var. truncatum, Moore.

Aspidium—Shield Fern. *Angulare*—Angular. *Truncatum*—Truncate.

In the Section Polystichum of Authors.

This remarkable variety of a handsome British species was originally found in Ireland, but has since been raised from spores in various ferneries. Its distinguishing features are the truncated form of the fronds and pinnæ.

The frond terminates abruptly. The pinnæ are short, with from three to four pairs of pinnules, terminating with a fan-shaped pinnule, the remainder of the pinnules being palmately lobed and deeply toothed.

Veins ramose; venules simple or furcate.

Sori sub-medial, almost marginal.

Length of frond from nine to eighteen inches, breadth from two to three inches. Colour deep green above, much paler beneath. Stipes very scaly.

The coriaceous texture of the fronds, and their abrupt termination, as well as those of the pinnæ and the palmately lobed pinnules, render this highly-interesting Fern very distinct.

For fronds my thanks are due to Mr. Stansfield, of Todmorden.

POLYPODIUM FLEXILE. P. FLEXILE, Var. Lacinatum.

Portion of mature Frond—under side.

POLYPODIUM FLEXILE.

Moore. Henfrey.

PLATE XLVI.—A.

Polypodium alpestre, var. flexile,	Lindley and Moore.
Pseudathyrium flexile,	Newman.
Phegopteris flexilis,	J. Smith.

Polypodium—Polypody. *Flexile*—Bending.

A very pretty and distinct hardy British Fern, more slender and flaccid than *Polypodium alpestre,* narrower fronded, the pinnæ being shorter, and the pinnules much less numerous.

Pinnæ brief, spreading, deflexed, having six to eight pairs of pinnules. Pinnules oblong and narrowing below; distantly toothed.

Stipes very brief.

Sori chiefly at the base of the frond, six or eight on a pinnule. Apex barren.

Length of frond from six to sixteen inches.

Found in Glen Prosen, Clova Mountains, by Mr. Backhouse.

For fronds my thanks are due to Mr. Stansfield, of the Vale Gardens, Todmorden.

POLYPODIUM FLEXILE, Var. Laciniatum.

Stansfield, M.S.

PLATE XLVI.—B.

Polypodium—Polypody. *Flexile*—Bending. *Laciniatum*—Folded.

This very pretty variety of *Polypodium flexile* is quite distinct.

It was raised from spores in 1858, in the fernery of Messrs. Stansfield, Todmorden, near Manchester.

It is easily distinguished from *Polypodium flexile* by its densely set and laciniated pinnæ.

The pinnæ are recurved towards the base of the stipes, brief, and rounded at the end; the pinnules decurrent, variously toothed or laciniated, and densely set.

Veins branched; venules simply furcate.

Sori medial and covered with an indusium, as in the *Athyrium* family; indeed this and the normal form seem to be as closely connected with *Athyrium* as with *Polypodium*.

Length of frond from four to nine inches, and about an inch broad.

For fronds my thanks are due to Messrs. Stansfield, of Todmorden.

CYSTOPTERIS FRAGILIS, Var. Furcans.

Moore

PLATE XLVII.—A.

Cystopteris—Bladder-Fern. *Fragilis*—Frail. *Furcans*—Forked.

This charming, distinct, and constant Fern was found on Ben Lawers, in 1858, by Mr. James Horsfall, of Todmorden. It is distinguished from the normal form by the furcations of the fronds and pinnæ.

The fronds are once or twice forked at their apices.

The pinnæ, which are pinnatifid, are forked at their apices, the pinnules are obtusely-ovate, toothed, and sometimes furcate.

The venation and sori as in *Cystopteris fragilis*.

Fronds from four to nine inches in length, and from one to two inches broad.

For the illustration my obligations are due to Mr. Stansfield, of Todmorden.

SCOLOPENDRIUM VULGARE, Var. Reniforme.

Moore.

PLATE XLVII.—B.

Scolopendrium—Hart's-tongue. *Vulgare*—Common. *Reniforme*—Kidney-shaped.

The *Scolopendrium reniforme* is one of the curious and highly-capricious forms of the variety *Variabile* of Moore.

It was gathered in Devonshire, in 1850, by Mr. D. Hillman, and has also been found at Oldstead, by Mr. C. Monkman, and in the Channel Islands, by Mr. James, of Vauvert.

The fronds are abrupt, and often truly kidney-shaped. Other forms of fronds are occasionally produced variously lobed, and others again approaching the normal form.

The veins radiating from the top of the stipes, twice furcate, and free.

Sori normal.

Length of frond from one to four inches, breadth from one to two inches.

For a plant my thanks are due to Mr. James, of Vauvert, and for fronds to Mr. Stansfield, of Todmorden.

ASPLENIUM MARINUM, Var. Interruptum.

Monkman, M.S.

PLATE XLVIII.—A.

Asplenium—Spleenwort. *Marinum*—Sea. *Interruptum*—Interrupted.

This plant was found along with the variety *Trapeziforme*, (of which it is a sport,) about four years ago, some five or six miles north of Scarborough, on the high moorland cliff of that very wild part of the Yorkshire coast.

Like *Asplenium marinum*, var. *trapeziforme*, the variety *interruptum* has a somewhat more dwarf habit than that of the normal form of the species. It is thick and leathery in texture, whilst in general outline it is exactly analogous to *Cystopteris interrupta*.

Length of frond nine or ten inches; breadth in the normal parts one inch and a half to one inch and three-quarters.

The pinnæ are very irregular in form, some being much depauperate, occasionally a mere midrib, and frequently wanting.

Every frond varies, usually about half the pinna is of the type of the variety *trapeziforme*.

The venation resembles that in the normal form, except in being confused in the depauperate portions, as is always the case. Fertile.

For fronds my thanks are due to Mr. C. Monkman, of Malton, Yorkshire.

ASPIDIUM FILIX-MAS, Var. Willisonii.

Lowe.

PLATE XLVIII.—B.

Lastrea filix-mas, var. Willisonii, Stansfield, M.S.

Aspidium—Shield-Fern. *Filix-mas*—Male-Fern. *Willisonii*—Named after Mr. Willison, the discoverer.

In the Section Lastrea of Authors.

This singular variety of the British Male-Fern was discovered, in 1859, near Whitby, Yorkshire, by Mr. Willison.

The fronds are narrow and attenuated, the pinnæ are also narrow and prolonged. Pinnules short, somewhat eroded, and decurrent.

Length of frond from twelve to twenty-four inches.

My thanks are due to Mr. C. Monkman, of Malton, for a frond of this variety.

PTERIS AQUILINA, Var. Esculenta.

Hooker.

PLATE XLIX.

Pteris	*esculenta,*	Forster. Swartz. Labillardiere.
"	"	Schkuhr. Willdenow. Brown.
"	"	Blume. Endlicher. Agardh.
"	*semihastata,*	Wallich. Agardh.
"	*densa,*	Wallich.
"	*arachnoides,*	Kaulfuss. Kunze. Agardh.
"	*lorigera,*	Wallich.

Pteris—Brake. *Aquilina*—Eagle-like. *Esculenta*—Eatable.

A pretty, narrow, slender variety of the Common Brakes, more especially abundant in the southern hemisphere.

Native of Australia, New Zealand, Society Islands, Tasmania, Torfolk Island, Feejee Islands, Tropical America, Jamaica, Peru, Venezuela, Guiana, Galipagos, Brazil, India, Borneo, and the Indian Archipelago.

In this variety the fronds are usually glabrous, the pinnules distant, narrow-linear, the superior pinnules mostly decurrent and confluent, the portion that is decurrent forming a shallow rounded auricle.

Length from twelve to twenty-four inches.

For fronds my thanks are due to Mr. J. Smith, Curator of the Royal Gardens, Kew, and to Mr. G. Norman, of Hull.

SCOLOPENDRIUM VULGARE, Var. Ramosum-majus.

Moore.

PLATE L.

Scolopendrium—Hart's-tongue. *Vulgare*—Common.
Ramosum-majus—Large-branched.

A handsome vigorous-growing variety, ramose in habit, two or three united by their stipes into one compound or ramose frond. Stipites thick. A constant permanent variety. The frond usually undulate or subundulate, and the margin slightly crenate.

Sori long and narrow.

Length of frond twelve or more inches, breadth one to two inches.

Raised from spores in the Fernery of Mr. Clapham, of Scarborough.

For fronds I am indebted to Mr. Clapham, of Scarborough; Mr. Monkman, of Malton; and Messrs. Stansfield, of Todmorden.

SCOLOPENDRIUM VULGARE,

Var. Sublineato-striatum.

PLATE LI.—A.

Scolopendrium—Hart's-tongue. *Vulgare*—Common.
Sublineato-striatum—Almost linear-striated.

A very interesting variety, much cut, and very irregular on the margin.

The fronds are crenately lacerated on the edges, and margined with a line along the under surface of the frond.

This Fern differs from the other submarginate varieties in having raised lines and striæ across the upper surface of the frond.

Sori bold, near the margin, with small detached portions almost marginal.

Length about twelve inches, breadth from one to two inches.

Veins darker, giving the frond a striped appearance. Apex of frond pointed.

It was gathered in Devonshire by Mr. Hillman, a well-known collector of Ferns.

For fronds my thanks are due to Messrs. Stansfield, Vale Gardens, Todmorden.

SCOLOPENDRIUM VULGARE,

Var. Sagittato-cristatum.

Moore.

PLATE LI.—B.

Scolopendrium—Hart's-tongue. *Vulgare*—Common.
Sagittato-cristatum—Arrow-shaped and cristate.

A handsome variety, arrow-shaped at the base.

The fronds are slightly undulated or wavy, and dichotomously divided, the apices multifid, broad, and somewhat cristate and striate. Basal lobes sagittate. Somewhat inconstant.

It was found by Mr. A. Clapham, near Scarborough.

A much finer and quite constant form has since been found in Devonshire, in 1859, by Mr. Hillman. In this variety the lobes are truly sagittate, and sometimes cristate, and the fronds are terminated by a corymbose tassel, frequently nine inches across.

Mr. Clapham's form is about twelve inches in length, and three inches in breadth at the apex.

My thanks are due to Mr. Stansfield, of Todmorden, for fronds.

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SCOLOPENDRIUM VULGARE, Var. Contractum.

PLATE LII—A.

Scolopendrium—Hart's-tongue. *Vulgare*—Common.
Contractum—Contracted.

In this singular Fern the fronds are multifidly tufted at their apices. Below the apex the frond is contracted to one-half the usual breadth, or even less.

Sori in the crenatures, slightly above, as well as on the under surface of the frond.

Length from nine to twelve inches, breadth two inches.

Found in the Island of Guernsey by Mr. Jackson, and at Nettlescombe by Mr. Elworthy.

My thanks are due to Mr. Stansfield, of Todmorden, for fronds.

SCOLOPENDRIUM VULGARE, Var. Suprasoriferum.

PLATE LII.—B.

Scolopendrium—Hart's-tongue. *Vulgare*—Common.
Suprasoriferum—Soriferous above.

A form of the variety *Crenato-lobatum* of Moore. Crenately lobed on the margin, bearing sori on the upper as well as on the under surface of the frond; below the sori bold.

Crenately lobed. Fronds broad.

Length twelve or more inches, breadth from one to two inches.

Forms of this Fern have been found in many places in Great Britain.

My thanks are due to Mr. Stansfield, of Todmorden, for fronds.

Apex of Frond.

SCOLOPENDRIUM VULGARE,

Var. Crenato-multifidum.

Scolopendrium—Hart's-tongue. *Vulgare*—Common.
Crenato-multifidum—Crenate multifid.

A handsome form of the Hart's-tongue Fern, gathered by several persons in various limestone districts.

Crenate on the margins, with a marginal line on the under surface, and multifidly furcate at the apex. Narrow, and apices pointed. Very scaly, especially near the midrib.

Length from twelve to twenty-four inches, and from one inch to one inch and a quarter broad.

To Mr. Stansfield, of Todmorden, my thanks are due for fronds.

ASPIDIUM DILATATUM, Var. Lepidotum.

PLATE LIII.

Lastrea dilatata, var. *lepidota*, Moore.

Aspidium—Shield Fern. *Dilatatum*—Spread out. *Lepidotum*—Scaly.

In the Section Lastrea of Authors.

A very remarkable variety of the Broad Prickly-toothed Buckler Fern.

It was found in Yorkshire six or seven years ago, and procured from Mr. Stark, of Edinburgh.

The fronds are very broadly ovate in form, quadripinnate, the ultimate pinnules being pinnatifid, toothed, and small in size.

Stipes and rachis densely scaly.

So different is this Fern, that Mr. Moore gave it the MS. name of *Lastrea lepidota*, believing it to be a distinct species.

Length of frond eighteen inches.

It is a more divided Fern than any other British *Aspidium*.

My thanks are due to Mr. Edwin Cooling, of Derby, for the frond from which the illustration is taken.

ASPIDIUM FILIX-MAS, Var. Acrocladon.

PLATE LIV.

Lastrea filix-mas, var. *acrocladon*, Clapham, MS.

Aspidium—Shield Fern. *Filix-mas*—Male Fern.
Acrocladon—Branched ends.

In the Section Lastrea of Authors.

A very beautiful variety of the Male Fern, raised from spores by Mr. Clapham, of Scarborough. The fronds are elegant in shape, the pinnules deeply incised, and the apices of the pinnæ multifid, being most so at the base of the frond, and scarcely so at the upper portion, near the apex.

Length of frond two feet.

My thanks are due to Mr. Clapham, of Scarborough, for the frond figured.

ASPIDIUM FILIX-MAS, Var. Cristatum-angustatum.

PLATE LV.—A.

Lastrea filix-mas, var. *cristata-angustata*, Moore.

Aspidium—Shield Fern. *Filix-mas*—Male Fern.
Cristatum-angustatum—Narrow crested.

In the Section Lastrea of Authors.

The present variety is exceedingly distinct from the beautiful multifid variety, *Cristatum*. The frond is remarkably narrow, nearly linear, being only from an inch to an inch and a half in width. The pinnæ are crested, except the upper portion of the frond, and the extreme point is tasseled.

The stem is covered with reddish brown scales.

Length of frond twelve to eighteen inches.

This variety was raised from spores by Mr. R. Sim, of Foot's Cray, and is quite constant.

My thanks are due to Mr. Cooling, Nurseryman, Mile Ash, Derby, for the frond figured.

ASPLENIUM FILIX-FŒMINA, Var. Laciniatum.

PLATE LV.—B.

Athyrium filix-fœmina, var. *laciniata*, Moore.

Asplenium—Spleenwort. *Filix-fœmina*—Lady Fern.
Laciniatum—Laciniated.

In the Section Athyrium of Authors.

This curious variety of our Lady Fern was found at Nettlecombe, by Mr. Elworthy.

For further information regarding the varieties of the Lady Fern, see vol. v, pages 87 to 89, of Lowe's "Natural History of Ferns," and pages 31, 33, 34, and 97 of the present volume.

It is small in size, and irregular in form. The pinnæ are sometimes caudate, sometimes præmorse, and at others quite short. The pinnules are also very variable in size and form; they are decurrent, and very irregularly laciniated.

For fronds my thanks are due to Mr. Edwin Cooling, of the Mile Ash Nursery, Derby.

ASPIDIUM ANGLARE.
Var. Anglicum.

ASPIDIUM ANGULARE, Var. Aristatum.

PLATE LVI.

Polystichum angulare, var. *aristatum*, Moore.

Aspidium—Shield Fern. *Angulare*—Angled. *Aristatum*—Awned.

In the Section Polystichum of Authors.

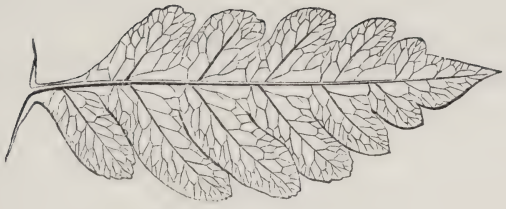
The above Fern was found in Sussex, by Mr. Wollaston, and subsequently near Burnley, Lancashire, by Mr. Stansfield.

Its distinctive feature is in the bristly points of the serratures being more developed than usual, and turning upwards. The stipes is proliferous.

It is a pretty Fern.

For additional information on the varieties of *Angulare*, see vol. vi, pages 68 to 71, of Lowe's "Natural History of Ferns," and pages 67 and 110 of the present volume.

My thanks are due to Mr. Stansfield, of Todmorden, for the frond figured.



Pinna of barren Frond.

PTERIS AREOLATA.

Lowe.

PLATE LVII.

Litobrochia areolata, Moore.

Pteris—Brake. *Areolata*—Name in reference to the areoles.

In the Section Litobrochia of Authors.

A new and rare species, introduced by Mr. R. Sim, of Foot's Cray, having been raised from East Indian spores in 1858. It is considered by Mr. Moore to be an undescribed species.

The fronds are nearly erect, and about eighteen inches in length; pinnato-pinnatifid; sparingly proliferous on the rachis. Stipes long, namely, nine inches. The crown slightly scaly, the scales being greyish in colour. The basal pinnæ are bipartite. Pinnæ opposite; the segments of the pinnæ falcate, bluntish, and somewhat distant.

Width of frond five inches; colour very bright green.

The fronds are remarkable for the large areoles along the costa, and also along the costules.

Sori linear, continuous, and marginal. Fertile fronds more contracted, and pretty. Veins reticulated.

For fronds I am indebted to Mr. R. Sim, of Foot's Cray, Kent.

Pinna of fertile Frond.

BLECHNUM LÆVIGATUM.

CAVANILLES. HOOKER. SWARTZ. WILLDENOW. DESVAUX. R. BROWN. MOORE. SPRENGEL. KUNZE.

PLATE LVIII.

Lomaria scabra,	KAULFUSS. PRESL. FEE.
Orthogramma lævigata,	PRESL.
Blechnum ambiguum,	KAULFUSS. PRESL.
Parablechnum ambiguum,	PRESL.
Lomaria ambigua,	FEE.

Blechnum—From Blechnon, the Greek name for a Fern.
Lævigatum—Smooth.

A MOST interesting species from Port Jackson, New South Wales.

Introduced into this country by Mr. R. Sim, of Foot's Cray, in 1859.

The fronds are oblong-ovate, truncate at the base, and pinnate; the sterile fronds spreading, and the fertile ones erect; the pinnæ spreading, sub-opposite below, alternate above; sessile and dentate-serrate. There are from fifteen to twenty-one pinnæ, the terminal one large. The sterile pinnæ elliptical, and obtusely acuminate, rosy in colour while young; the fertile pinnæ erect, much contracted, being linear and more distant;

also pinnate, their width varying from one eighth to a quarter of an inch.

Veins simple, or once or twice forked.

Sori broad and costal, with broad involucres.

Caudex stout, erect, and covered with large, shaggy, lanceolate, pale ferruginous scales.

Stipes light brown, scaly at the base, and from six to twelve inches in length.

Fronds from ten to eighteen inches in length. Length of pinnæ from two to two and a half inches, except the ultimate pinna, which is twice this length.

The copious pellucid dots on the pinnæ render this an interesting object for the microscope.

For fronds my thanks are due to Mr. R. Sim, of Foot's Cray Nursery, Kent.

ASPLENIUM DENTICULATUM.

Pinna—under side.

ASPIDIUM DENTICULATUM.

Swartz. (*Not of* Wallich.)

PLATE LIX.

Lastrea denticulata, Moore. J. Smith. Presl.
Polystichum denticulatum, J. Smith.

Aspidium—The Shield Fern. *Denticulatum*—Toothed.

In the Section Lastrea of Authors.

This very handsome, dwarf, *Davallia* or *Polystichum*-looking Fern is a native of Jamaica.

A stove species, introduced into this country by Mr. R. Sim, of Foot's Cray, in the year 1859.

Fronds tripinnate, cuneate in form. Habit more spreading than erect; crown erect, and freely covered with reddish or brownish scales.

Length of frond from nine to twelve inches, of which the stipes occupies one half.

Pinnæ sub-opposite below, alternate above; pinnules cuneate at the base, and sharply dentate at their apices.

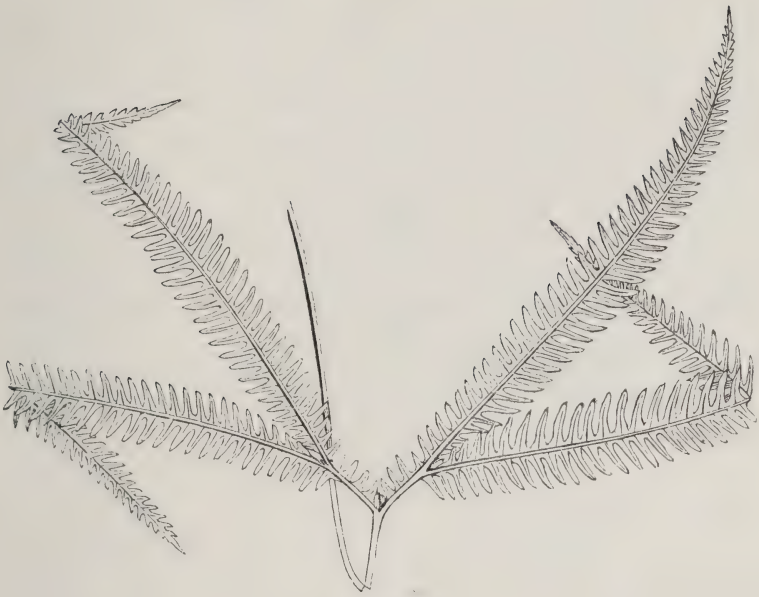
The pinnæ and fronds narrowing to a point at their apices.

Colour bright green; glabrous.

Rachis and stipes greenish; rounded below and fluted above.

Veins branching.

For fronds my thanks are due to Mr. R. Sim, of Foot's Cray Nursery.



Frond reduced.

GLEICHENIA FURCATA.

SWARTZ. J. SMITH.

PLATE LX.

Gleichenia pubescens, var. *glabra*,	HOOKER.
Mertensia furcata,	SWARTZ.
Acrostichum furcatum,	LINNÆUS.
Polypodium "	SWARTZ.

Gleichenia—Named in honour of Baron P. F. Von Gleichen, a German Botanist. *Furcata*—Forked.

IN THE SECTION MERTENSIA OF AUTHORS.

A VERY interesting, handsome, stove species from the West Indies. Introduced by Mr. R. Sim, of Foot's Cray, and also received at the Royal Gardens, Kew, at about the same time. Mr. Smith announced this Fern as the *Gleichenia furcata* of Swartz; but Sir W. J. Hooker has figured it in his "Species Filicum," as a glabrous variety of *G. pubescens*, of Willdenow.

The rhizomes of this species are nearly as robust as, and by no means unlike those of, *G. flabellata.*

It is a large species, probably attaining the height of four or five feet, and the abundant dichotomes are very leafy.

Stipes round; fronds repeatedly dichotomous leafy; pinnæ pinnatifid, ascending; lanceolate-acuminate in form; segments horizontal and linear obtuse. Somewhat glabrous beneath.

For fronds my thanks are due to Mr. R. Sim, of Foot's Cray Nursery, Kent.

Frond reduced.

PTERIS PROLIFERA.

Lowe.

Pteris cretica, var. *prolifera*, Moore.

Pteris—Brake. *Prolifera*—Proliferous.

According to Mr. T. Moore, this is a variety of the *Pteris cretica*, figured in Vol. III, Plate XLIII, of my "Natural History of Ferns;" there are, however, characters about it so markedly different from *Pteris cretica*, that I think it may at all events be provisionally raised to the rank of a species; and as I believe there is no *Pteris prolifera*, I have adopted Mr. Moore's name in part.

A stove Fern from the East Indies.

Introduced by Mr. R. Sim, of Foot's Cray, in 1858.

Crown erect; scales few, small, close, and greyish. Stipes glandular.

The seedling plants, and the tiny bulbils on the costæ of the pinnæ, are streaked like those of *Pteris aspericaulis, P. tricolor, etc.*

Length of barren frond six to nine inches, of fertile frond nearly twelve inches. Colour pale green, red when young.

Fronds pinnate. Sori marginal.

For fronds my thanks are due to Mr. R. Sim, of Foot's Cray, Kent.

ASPIDIUM TRIANGULUM, VAR. LAXUM.

HOOKER.

Polystichum triangulum, var. *Laxum*, MOORE. J. SMITH.

Aspidium—The Shield Fern. *Triangulum*—Triangular.
Var. Laxum—Lax variety.

In the Section Polystichum of Authors.

An exceedingly handsome, stove, very scaly Fern, introduced into this country in 1859, from spores, by Mr. R. Sim, of Foot's Cray, from Jamaica.

The habit is pretty, and tufted. The fronds are narrow, linear, with small, sharp-pointed, triangular, or subtrapeziform pinnæ, and having a few large, spiny, recurved segments at the base.

It resembles *Polystichum triangulum*, but has more divided fronds.

Crown erect, stout, and fawny-scaled.

Sparingly proliferous.

Length of frond from fifteen to eighteen inches. Colour rich green. Width in widest part an inch.

The normal form of this Fern is figured on Plate XXXI—B, Vol. VI., of my "Natural History of Ferns," under the name of *Aspidium mucronatum*, Swartz.

For fronds my thanks are due to Mr. R. Sim, of Foot's Cray, Kent.

ADIANTUM SULPHUREUM.

Kaulfuss. Hooker. Kunze.

PLATE LXI.

Adiantum—Dry. *Sulphureum*—Sulphureus.

A lovely very rare Fern.

Native of Chili, Conception, and Peru.

The fronds, which are ovate in form, are tripinnate; the pinnules, which are small, are obovate-reniform, petiolulate, glabrous, membranaceous; deep green on the upper surface, and covered with a shining yellow pulverulent substance underneath.

Sori copious, contiguous, situated in the notch, and somewhat reniform in shape.

Stipes and rachis glabrous and ebeneous.

There are two varieties; in the one (var. *minus*) the pinnules are small, and the sori reniform, the length of frond being from four to five inches; in the other (var. *majus*) the pinnules are larger, the sori oblong-reniform, and the length of frond twelve inches.

I believe this species is not in any collection in a living state in this country except in that of Mr. Backhouse, of York.

The frond illustrated was kindly sent by Mr. Backhouse.

A

L. RIGIT

TRICHOMANES SCANDENS.

LINNÆUS. HOOKER. SWARTZ. WILLDENOW. SLOANE.
(*Not of* HEDWIG *or* PLUMIER.)

PLATE LXII.—A.

Trichomanes—From the Greek, soft hair. *Scandens*—Climbing.

A LOVELY delicate stove species, climbing very rapidly on trees.

Native of Jamaica and Mexico.

The fronds are bipinnate, ovate-acuminate in form, and curving; the pinnæ, which are lanceolate, are bipinnatifid, the ultimate pinnæ decurrent; segments oblong, margin ciliated; involucres small, and quite buried in the brief lateral segments. Obscurely two-lipped, the lips spreading.

Costa, rachis, and stipes covered with tawny hairs; caudex long, brownish, creeping, and tomentose.

Length of frond from fifteen to eighteen inches. Colour very pale green.

Cultivation. A humid airy atmosphere, with a temperature of from 50° to 70°.

Found creeping on Tree Ferns and palms.

My thanks are due to Mr. Backhouse, of York, for the frond illustrated. This well-known Nurseryman has a magnificent collection of *Trichomanes* and *Hymenophyllums*, many of them exceedingly handsome, and not to be found in any other collection in this country.

TRICHOMANES RIGIDUM, Var. Pulchellum.

Swartz. Hooker. Hedwig.
Willdenow. (*Not of* Klotzsch, Raddi, *or* Wallich.)

PLATE LXII.—B.

Trichomanes	*pyramidale,*	Wallich.
"	*achillæifolium,*	Willdenow.
"	*Mandioccanum,*	Raddi.
"	*obscurum,*	Blume. J. Smith.

Trichomanes—From the Greek, soft hair. *Rigidum*—Rigid.

A fine tropical Fern, from Jamaica, Dominica, Martinique, Brazil, Peru, Quito, Mauritius, Islands in the Pacific, Philippine Islands, and Ceylon.

The fronds, which are broadly ovate, thick, and rigid, are bipinnate; the pinnules lengthy lanceolate, cuneate; ultimate segments varying in size, subacute, and either simple or bifid, very narrow and rounded.

Involucres supra-axillary on the inner margin of the lower segments, free, the mouth entire, and not two-lipped.

Rachis terete, wingless, or with a narrow wing.

Fronds nine to twelve inches in length; the stipes from four to six inches, sometimes more, being half the length of the whole frond. Colour dark green.

Sori numerous.

Fronds erect, on round wiry stalks.

Requires a very humid but airy atmosphere, with a temperature varying between 55° and 80°.

There is a variety with broader and more crowded divisions. The typical form has nearly flat and somewhat dense fronds.

My thanks are due to Messrs. J. Backhouse and Son, of York, for the frond illustrated.

TRICHOMANES PLUMA.

Hooker.

PLATE LXIII.—A.

Trichomanes—From the Greek, soft hair. *Pluma*—A feather.

This exceedingly beautiful rare species was found near Sarawak, in Borneo, by Mr. Thomas Lobb, the indefatigable traveller of Messrs. Veitch, of the Exotic Nurseries, Exeter and Chelsea.

The fronds, which are lanceolate, are tripinnate to quadripinnate, the branches minutely reticulated, and beset with brief rigid hairs. The segments are all hair-like, and stand out on all sides, forming a thickened mass. The involucres are very small, and the receptacle unusually long and thick.

Caudex creeping, thick, short, and setaceo-squamose.

Stalks wiry and erect; fronds rigid.

Length of frond from nine to fifteen inches.

Found growing amongst decayed logs and moss.

Requires an exceedingly humid atmosphere, and a temperature ranging between 50° and 70°.

My thanks are due to Messrs. J. Backhouse and Son, Nurserymen, York, for the frond illustrated.

TRICHOMANES KAULFUSSII.

Hooker and Greville.

PLATE LXIII.—B.

Trichomanes lucens, Hooker and Greville, (excl. syn.)

Trichomanes—From the Greek, soft hair. *Kaulfussii*—Named after Kaulfuss, a celebrated cryptogamic botanist.

This handsome erect species is from Jamaica, St. Vincent, British Guiana, Dominica, and St. Thomas.

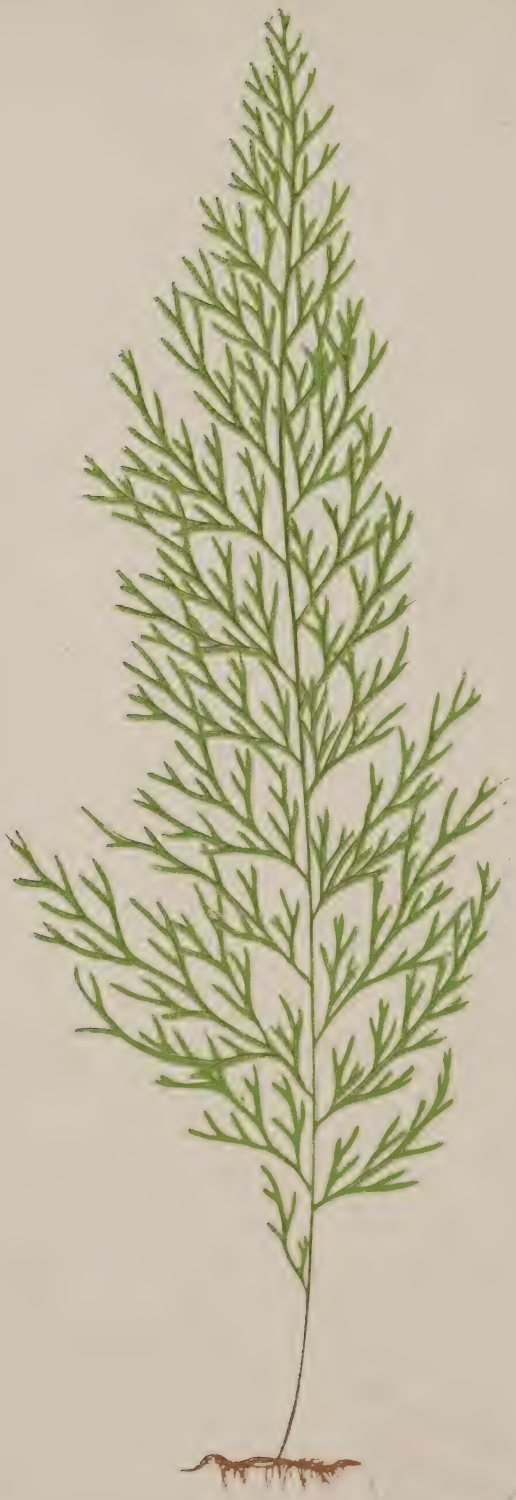
It requires a very moist firm soil and a humid close atmosphere, with a range in temperature from 65° to 85°.

The fronds are narrow, approximate, somewhat hairy, sub-bipinnatifid, rachis broadly winged. Segments approximate, horizontal, lanceolate, rigid, lobato-dentate; lobes brief and blunt. Pinnæ mostly opposite.

Involucres abundant, cylindrical, cup-shaped, entirely sunk in the segment, the mouth slightly spreading. Receptacles filiform and much exserted. Stalks hairy; stipes winged; rhizoma thick and very short.

Length of frond from nine to eighteen inches. Colour dull green.

My thanks are offered to Messrs. Backhouse and Son, of York, for the frond illustrated.



TRICHOMANES PINNATUM. T. ELEGANS.

TRICHOMANES EXSECTUM.

Kunze. Hooker.

PLATE LXIV.—A.

Trichomanes—From the Greek, soft hair. *Exsectum*—Cut out.

A most lovely creeping Fern, hanging pendant from the roofs of damp caverns.

Native of Juan Fernandez and Southern Chili.

The fronds are extremely delicate and membranaceous, and resemble thin, flat, much branched, green sea-weed; flaccid, oblong-pinnate, the pinnæ being bipinnatifid; segments narrow, linear, smooth, and simple or bifid obtuse. Stalks slender and wiry.

Involucres oblong, buried in the frond; mouth spreading, almost two-lipped.

Rachis and stipes winged above, naked below.

Caudex creeping.

Length of frond from four to fourteen inches, width sometimes six inches; vivid green in colour.

Cultivation. A very humid rather close atmosphere, with a temperature ranging from 40° to 65°.

To Messrs. Backhouse and Son, Nurserymen, York, I am indebted for the frond illustrated.

Portion of barren Frond.

TRICHOMANES ELEGANS.

Rudge. Hooker.

PLATE LXIV.—B.

Hymenostachys diversifrons, Bory.

Trichomanes—From the Greek, soft hair. *Elegans*—Elegant.

A most distinct Fern, from Guiana, Gorgona, Panama, and Pacific side of Central America.

This most elegant and singular species forms tufts of very deep green, drooping, shining, sterile fronds; which are pinnatifid, about four inches in length, with a stipes of two or three inches, being much shorter than the fertile fronds. The form is broadly lanceolate, segments almost horizontal, crowded, lanceolate, subfalcate, the edge serrated. Frequently caudate and proliferous at the apex. Width of frond an inch and a quarter to an inch and a half. Tufted. Veins reticulated.

The fertile fronds, which are from six to twelve inches in length, are very different to the sterile ones, being extremely narrow and undivided; situated on erect stalks. Width not half an inch, having forked transverse veins and closely-united involucres, forming the edge on each side, which is fringed with the coarse hair-like, abundant, slender, lengthy, filiform receptacles. Length of stipes about half that of the frond.

Colour deep green, and glistening.

Requires a very humid close atmosphere, with a range of temperature from 65° to 80°.

My thanks are due to Messrs. Backhouse, for fronds.

LXV

TRICHOMANES ANCEPS.

Hooker. (*Not of* Wallich.)

PLATE LXV.

Trichomanes elegans,		Richard.
"	*rigidum,*	Klotzsch.
"	*achilleæfolium,*	J. Smith. (*Not of* Willdenow.)
"	*villosum?*	Wallich.

Trichomanes—From the Greek, soft hair. *Anceps*—Doubtful.

A most magnificent species.

A stove Fern.

Native of Brazil, Dominica, Guiana, Gorgona, Singapore, East Indies, and Philippine Islands.

The fronds are pinnate, and broadly ovate in form; the pinnæ bi-tripinnatifid and distant; segments linear, simple, or bifid. Pinnæ remote, sometimes six inches in length.

Stipes from six to eight inches in length, erect and hairy, and more or less winged. Rachis very broad.

Fronds from twelve to twenty-four inches in length; dark green, almost black, opaque, dense, firm, and nearly smooth and rigid.

Involucres supra-axillary and free, cylindrical in shape, tapering below. Mouth entire, much spreading, and not two-lipped.

Requires a very humid close atmosphere, with a temperature ranging between 55° and 80°.

My thanks are due to Mr. J. Smith, of Kew, for fronds.

TRICHOMANES ATTENUATUM.

Hooker.

PLATE LXVI.

Trichomanes—From the Greek, soft hair. *Attenuatum*—Attenuated.

An elegant Fern, growing on the trunks of trees. Very distinct.

Native of Jamaica, Dominica, and St. Vincent.

Somewhat resembling *Trichomanes alatum* and *T. Kaulfussii*, but smaller.

The fronds, which are erect, translucent, and tufted, are ovate-lanceolate in shape, acuminate, and pinnatifid almost to the rachis; segments spreading, linear-lanceolate, attenuated and pinnatifid, membranaceous, flaccid, and shining.

Stipes densely hairy; rachis narrowly winged.

Involucres cuneate and cup-shaped, quite buried in the segment of the frond; the mouth wide-spreading and two-lipped. Receptacles much exserted.

Length of frond from four to six inches. Colour pale green.

Habit gracefully drooping.

Readily cultivated in a very moist close atmosphere, in a temperature ranging between 55° and 80°.

My thanks are due to Mr. J. Smith, of the Royal Gardens, Kew, and to Mr. James Backhouse, of York, for the fronds for illustration.

TRICHOMANES ANGUSTATUM.

CARMICHAEL. HOOKER AND GREVILLE. (*Not of* J. SMITH.)

PLATE LXVII—A.

Trichomanes fulvum,	KLOTZSCH.
" *tenerum*,	SPRENGEL.

Trichomanes—From the Greek, soft hair. *Angustatum*—Narrow.

A VERY slender, delicate, creeping stove species.

Native of Tristan d' Acunha, Brazil, Esmeraldas, El Equador, Pichincha, Peru, and Gonga Sakoo.

Caudex creeping, slender, and matted. Fronds pinnate, lanceolate in form, very flaccid, and graceful; the pinnæ bipinnatifid; segments very narrow, smooth, simple or bifid.

Rachis and stipes slender, filiform, terete, naked, and hair-like.

Fronds from three to five inches in length.

Involucres urceolato-cylindrical, and sunk in the frond; the mouth spreading and obscurely two-lipped.

Requires a very humid close atmosphere, with a temperature ranging from 60° to 80°.

My thanks are due to Mr. J. Smith, of the Royal Gardens, Kew, for fronds.

TRICHOMANES TRICHOIDEUM.

Swartz. Willdenow. Hooker and Greville.

PLATE LXVII—B.

Trichomanes pyxidiferum, Schkuhr.
" *tenellum*, Hedwig.

Trichomanes—From the Greek, soft hair. *Trichoideum*—Sea-weed-like.

A most lovely, delicate-looking, slender, minute, thread-like Fern; resembling the finest hair-like sea-weed.

Native of Trinidad, Jamaica, Mexico, Vera Cruz, Xalapa, and St. Domingo.

Caudex elongated and creeping.

Fronds broadly lanceolate, tripinnate; segments linear-capillary, bifid or forked, very fine, scarcely as broad as the filiform rachis.

Stipes very slender, from one to two inches in length. Filiform.

The fronds from three to six inches in length. Colour pale green.

Involucres terminal, on brief lateral segments, stipitate, urceolato-cylindrical, and large for the size of the frond. The mouth spreading and entire.

Requires a close, very humid atmosphere, with a temperature ranging from 55° to 80°.

The specimen illustrated was from the Island of Trinidad, very narrow and minute in all its parts, and only one inch in length. I am indebted for it to Mr. J. Smith, of the Royal Gardens, Kew.

TRICHOMANES SPICATUM.

R. Hedwig. Hooker.

PLATE LXVII—C.

Trichomanes elegans,	Rudge, (in part.) Hooker.
" *spicisorum,*	Desvaux.
" *osmundioides,*	Bory.
Feea polypodina,	Bory.

Trichomanes—From the Greek, soft hair. *Spicatum*—Spiked.

A lovely Fern, resembling *Trichomanes elegans,* but smaller in all its parts.

Native of Guiana, St. Vincent, Trinidad, Guadaloupe, and Jamaica.

The sterile and fertile fronds dissimilar, the sterile ones shorter than the fertile ones, pinnatifid, and broadly lanceolate in form; segments almost horizontal, oblong in shape, the margin sinuato-crenate; veins pinnate and free. Fertile frond linear, and a spike; having distichous, free to the rachis, urceolate, stipitate involucres. Fronds from three to six inches in length.

Climate required, airy and very humid, temperature from 55° to 75°.

My thanks are due to Mr. Smith, Curator of the Royal Gardens, Kew, for fronds.

Fertile Fronds, natural size.

TRICHOMANES PYXIDIFERUM.

LINNÆUS. SWARTZ. WILLDENOW. HEDWIG.
HOOKER AND GREVILLE. (*Not of* HUDSON *or* SCHKUHR.)

Trichomanes pedicellatum,	DESVAUX.
" *lacerum,*	DESVAUX.
" *Brasiliense,*	DESVAUX.

Trichomanes—From the Greek, soft hair. *Pyxidiferum*—.....?

A VARIABLE creeping Fern, growing on the trunks of palms and other trees.

Native of the West Indian Islands, Brazil, and Peru.

The fronds oblong-ovate, bi-tripinnatifid, membranaceous, shining, and almost transparent; segments linear, firm, flat, smooth, and entire, the apices frequently emarginate.

Stipes winged. Length of frond from three to six inches.

Involucres solitary, subcylindrical, the base attenuated, axillary, wholly buried in the segment; mouth broadly concave, scarcely two-lipped; the receptacles filiform, of great length, and considerably exserted.

Requires a rather close humid atmosphere, with a temperature varying between 55° and 75°.

There are several varieties more divided than in the normal form; in one the segments are crowded, and in another they are broader.

My obligations are tendered to Mr. Smith, of Kew, for fronds.

Mature fertile Fronds, natural size.

TRICHOMANES PUSILLUM.

SWARTZ. HEDWIG. WILLDENOW. HOOKER.

Didymoglossum pusillum, DESVAUX.

Trichomanes—From the Greek, soft hair. *Pusillum*—Small.

THIS species is allied to *Trichomanes muscoides,* but is smaller in size, being, in fact, a very minute Fern, creeping on the stems of palms and other exotic plants.

Native of Jamaica and Trinidad.

The fronds, which are erect, are somewhat cuneate, narrowing into a brief stipes; they are sub-bipinnatifido-lobate, costate, and crowded together.

Caudex creeping and tomentose.

Veins dichotomous and subpinnated. Margins having stellated hairs.

Involucres two-lipped, half buried in the lobe, cylindrical and narrowing; exserted slightly.

Cultivation in a damp atmosphere, with a temperature ranging between 55° and 75°.

My thanks are due to Mr. Smith, Curator of the Royal Gardens, Kew, for plants.

Mature Fronds, fertile.

TRICHOMANES KRAUSII.

Hooker and Greville.

Trichomanes—From the Greek, soft hair. *Krausii*—Named after Dr. Kraus.

A small, elegant, creeping Fern, growing on the trunks of trees.

Native of Guiana, Trinidad, Dominica, St. Vincent, Jamaica, Guadaloupe, Porto Rico, and Berbice.

Fronds profoundly pinnatifid almost to the rachis, oblong in form, segments linear-oblong, obtuse, sinuate, occasionally again pinnatifid; stellato-pillose in the sinuses; sessile or stipitate; somewhat wedge-shaped at the base.

Involucres subcylindrical, base attenuated, much sunk in the frond, two-lipped, the lips being semiorbicular, exserted, of large size, and usually tipped with red.

Caudex creeping and very tomentose.

Fronds from one to three inches in length.

Requires a humid airy atmosphere, ranging from 50° to 75° of temperature.

My thanks are due to Mr. Smith, for plants of this Fern.

Mature Fronds, natural size.

TRICHOMANES BOJERI.

Hooker and Greville.

Trichomanes undulatum, Wallich.

Trichomanes—From the Greek, soft hair. *Bojeri*—After Bojer.

A very small species, clothing the trunks of Tree Ferns and palms.

Native of the Mauritius.

Fronds erect, simple, membranaceous, flabelliform, and lobed; the lobes rounded, subcrenate, and soriferous; the margins perfectly glabrous.

Veins flabellate and dichotomous. Stipes elongated.

Involucres subcylindrical, the base attenuated; entirely buried in the frond, the mouth concave, spread out, scarcely two-lipped; the receptacles considerably exserted.

Caudex creeping and tomentose.

Requires a very humid atmosphere, ranging in temperature between 60° and 80°.

My thanks are due to Mr. J. Smith, of Kew, for fronds.

HYMENOPHYLLUM CAUDICULATUM.

TAB. VIII.

HYMENOPHYLLUM CAUDICULATUM.

Martius. Hooker.

PLATE LXVIII.

Hymenophyllum—Membrane-leaved. *Caudiculatum*—From the long caudate apices of the primary divisions, and of the fronds themselves.

A very handsome, erect-growing, large species, found in Chili and Brazil, on mossy trees, and among decaying vegetable matter.

The fronds, which are erect, smooth, translucent, and shining, are ovate-lanceolate, acuminate, and tripinnatifid; the primary divisions lanceolate, and, as well as the apices of the fronds, long-caudate; pinnæ alternate; segments brief and entire.

Length of frond from nine to fifteen inches. Stipes slender and broadly winged almost to the base. Colour of frond bright green.

Involucres supra-axillary, large, orbicular, and free, two-valved to the base, and entire.

Cultivated in an atmosphere rather close and very humid, with a temperature ranging between 40° and 65°.

My thanks are due to Messrs. Backhouse, of York, for the plant illustrated.

CHILOENSE. B.—H. CRISPU

—H. CILIATU

LXIX.

HYMENOPHYLLUM CHILOENSE.

Hooker.

PLATE LXIX—A.

Hymenophyllum—Membrane-leaved. *Chiloense*—Chili.

A small, pendent, densely-tufted species, carpeting trees and rocks in woods of Southern Chili.

The fronds are broad at the base, lanceolate, sub-bipinnatifid; segments broadly linear-obtuse, smooth above.

Involucres axillary, free, ovate, and toothed; valves semi-orbicular.

Stipes glabrous and not winged.

Colour of frond dull green.

Requires a very humid atmosphere, with a temperature ranging between 40° and 65°.

My obligations are offered to Messrs. Backhouse, of York, for the plant illustrated.

HYMENOPHYLLUM CRISPATUM.

Hooker and Greville. Wallich.

PLATE LXIX—B.

Hymenophyllum sanguinolentum,	J. Smith. (*Not* Swartz.)
" *flabellatum,*	Brown. (*Not* Labillardiere.)
" *atrovirens,*	Colenso.

Hymenophyllum—Membrane-leaved. *Crispatum*—Curled.

This pretty species clothes the trunks of Tree Ferns, etc., in Tasmania and New Zealand. Also a native of Nepal, Ceylon, and Luzon.

The fronds are broad, erect or curving, smooth, somewhat dense, ovate, acuminate, and tripinnatifid; the segments linear-obtuse. The fronds crisped, on winged stalks.

Length of frond from five to seven inches; colour deep green.

Involucres terminal, occasionally on lateral segments, ovate in form, copious, sessile, free, entire, and two-valved to the base; valves convex.

Rhizoma as in *Hymenophyllum flabellatum,* but less elongated.

There are several forms of this Fern:—

Var. *Minus.*—Has contracted-oblong fronds, with small fructification. It is from Ceylon. Smaller fronds.

Var. *Majus.*—Broader fronds and larger fructification. From Luzon.

Var. *Tasmanicum.*—From Tasmania. Having shorter and broader involucres.

Requires to be cultivated in a very humid, but airy atmosphere, with a temperature ranging between 40° and 65°.

To Messrs. Backhouse, of York, my thanks are due for the frond illustrated.

HYMENOPHYLLUM CILIATUM.

SWARTZ. HEDWIG. WILLDENOW. HOOKER.
(*Not of* SCHLECHTENDAL.)

PLATE LXIX—C.

Hymenophyllum—Membrane-leaved. *Ciliatum*—Hairy.

A STOVE Fern from the West Indies, Brazil, Surinam, and Mexico.

The fronds, which are bi-tripinnatifid, are somewhat oblong-ovate in form; the segments linear-obtuse, hairy throughout, especially along the margin of the fronds, and on the costa.

Stipes mostly brief, but varying in length, winged, sometimes almost to the base.

Fronds ranging from two to six inches in length.

Involucres broader than the segments, sub-orbicular, obliquely cordate at the base.

Similar in habit to *Hymenophyllum Chiloense* of Hooker, but double the size. Fronds dense.

Requires a very humid atmosphere, ranging in temperature from 50° to 75°.

I am indebted to Mr. J. Smith, Curator of the Royal Gardens, Kew, for the frond illustrated.

HYMENOPHYLLUM DILATATUM.

SWARTZ. SCHKUHR. WILLDENOW. HOOKER AND GREVILLE.

PLATE LXX.

Trichomanes dilatatum, FORSTER. BLUME.

Hymenophyllum—Membrane-leaved. *Dilatatum*—Dilated.

ONE of the largest and most beautiful of this lovely genus, growing among moss, decaying vegetable matter, and on rocks and trunks of trees in woods of New Zealand and Java.

The fronds are large, broad, and oblong; erect, and tripinnatifid; the primary divisions ovate-lanceolate; the segments attenuated, gracefully drooping, and entire.

Stipes and rachis erect, pale green in colour, and winged.

Length of frond from fourteen to twenty inches; colour pale green.

Involucres abundant on the upper half of the frond, terminal, orbicular, the lower half cuneate, and buried in the frond; the valves semi-orbicular and entire; receptacles clavate.

Rhizoma smooth, and brownish straw-coloured.

Requires a very humid, shady, close atmosphere, ranging in temperature from 40° to 65°.

For fronds my thanks are due to Messrs. Backhouse, of York.

HYMENOPHYLLUM PULCHERRIM

LXXI

HYMENOPHYLLUM PULCHERRIMUM.

Colenso. Hooker.

PLATE LXXI.

Hymenophyllum—Membrane-leaved. *Pulcherrimum*—Most beautiful.

An erect-growing, large, handsome species, found on the trunks of trees in New Zealand.

The fronds are smooth, tri-quadripinnatifid, ovate-lanceolate in form; segments brief, somewhat spreading, entire, bifid, the margins waved.

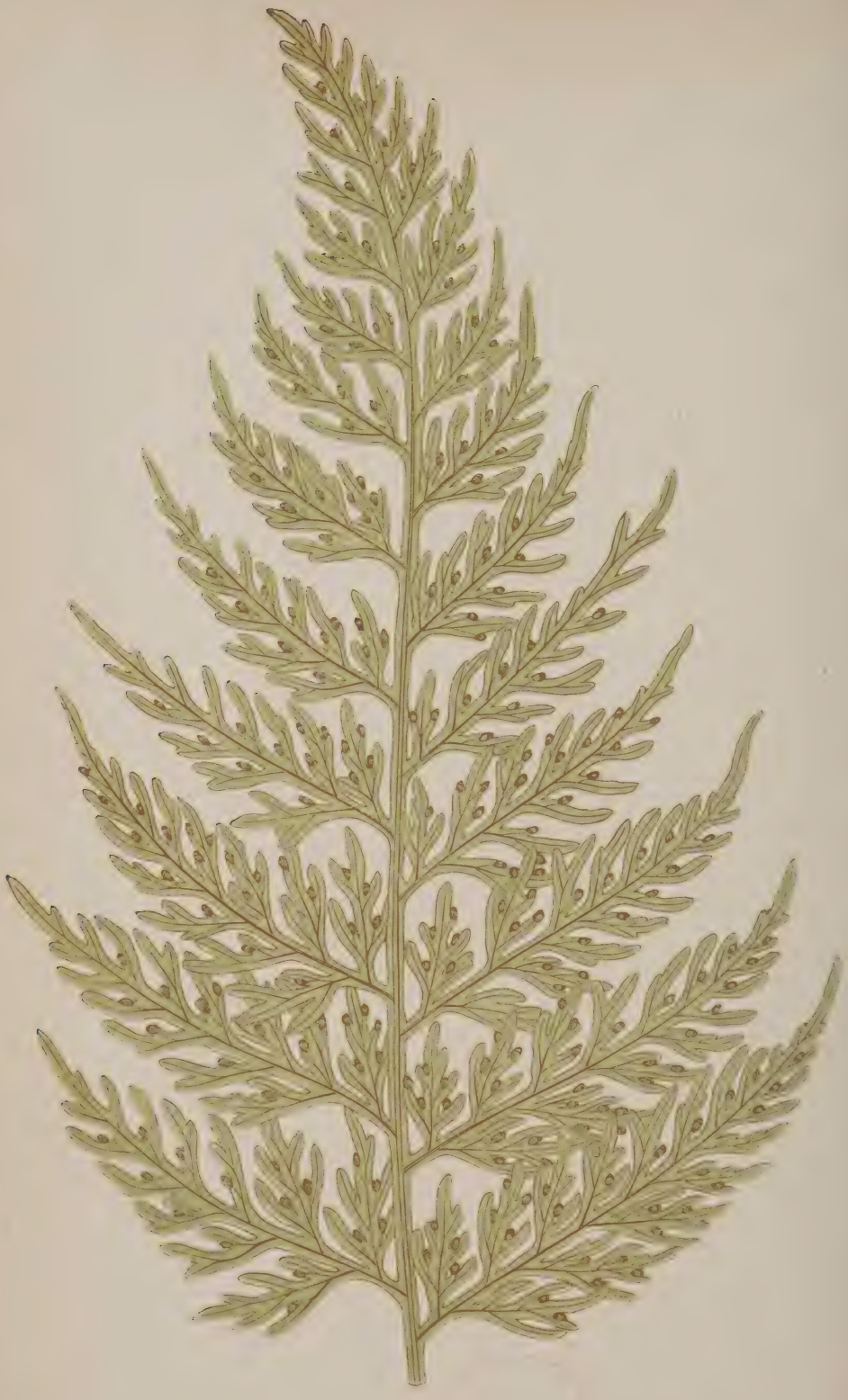
Stipes compressed, and winged to the base; secondary rachis flexuous.

Length of frond from ten to fifteen inches; colour pale green. The rachis and stipes of the same colour as the frond.

Involucres sessile, axillary, small, orbicular, free, two-valved to the base; valves entire and convex. Receptacles included.

Climate very humid; temperature from 40° to 65°.

To Messrs. Backhouse, of York, I am indebted for the frond illustrated.



HYMENOPHYLLUM FUCIFORME.

LXXII

HYMENOPHYLLUM FUCIFORME.

Swartz. Hooker. Willdenow.

PLATE LXXII.

Hymenophyllum fucoides, Cavanilles. (*Not of* Swartz.)

Hymenophyllum—Membrane-leaved. *Fuciforme*—.....?

The most magnificent *Hymenophyllum* known, growing in shady woods, on trunks of trees in Chili and Juan Fernandez.

The fronds, which are broad, rigid, erect, smooth, and shining, are tripinnatifid; segments broadly linear-obtuse, rounded, and bifid, ultimate ones attenuated.

Rachis broadly winged. Stipes stout, rigid, and pale in colour.

Length of frond from eighteen to thirty inches; and eight inches or more broad. Colour bluish green or glaucous.

Involucres supra-axillary, marginal, minute, ovate, two-valved to the base, and free; valves entire. Receptacles exserted.

Requires a very humid airy atmosphere, with a temperature from 40° to 65°.

My thanks are due to Mr. Backhouse, of York, for the frond illustrated.

HYMENOPHYLLUM FLEXUOSUM.

A. Cunningham. Hooker.

Hymenophyllum—Membrane-leaved. *Flexuosum*—Bending.

A beautifully crisped and undulated Fern from New Zealand, allied to *Hymenophyllum crispatum*, but having larger and more divided fronds. A Selaginella-looking species.

Fronds erect, stiff, almost deltoid, tri-quadripinnatifid, broadly ovate, with narrow, linear, entire, undulated segments.

Stipes and rachis winged.

Length of frond ten or twelve inches.

Involucres broader than the segments, terminal, free, orbicular, entire, and two-valved to the base.

Rhizoma like *Hymenophyllum crispatum*, but still shorter.

Requires a very humid atmosphere, with a temperature of from 40° to 65°.

The plant was kindly communicated by Mr. Backhouse, of York.

Portion of Frond.

HYMENOPHYLLUM SCABRUM.

A. Richard. Hooker. (*Not of* Less.)

Hymenophyllum—Membrane-leaved. *Scabrum*—Rough.

A beautiful, *Trichomanes*-looking, greenhouse Fern from New Zealand.

The fronds, which are rigid and erect, are pinnate, ovate in form, and acuminate; the pinnæ are bi-tripinnatifid and acuminate, the segments entire and narrow; stems rough with pale chaffy hairs.

Length of frond twelve to eighteen inches.

Involucres small, terminal, somewhat orbicular, sessile, free, and two-valved.

Allied to *Hymenophyllum demissum.*

Requires a very humid, rather airy atmosphere, with a temperature ranging between 40° and 65°.

Fronds were kindly communicated by Mr. Backhouse, of York.

ADDENDA.

NEW HYMENOPHYLLUMS AND TRICHOMANES.

The following *Hymenophyllums* and *Trichomanes* have been recently introduced by Mr. Backhouse, but although I have been unable as yet to procure fronds of them, it has been deemed advisable before finishing the volume, to briefly enumerate each.

HYMENOPHYLLUM ABRUPTUM, *Hooker.*—A dwarf Fern, with broad, blunt, pinnatifid fronds, on wiry stalks. Native of Jamaica, densely carpeting mossy trunks and rocks. Fronds an inch and a half to two inches in length. Figured by Sir W. Hooker, plate 31—B, vol. i, "Species Filicum."

HYMENOPHYLLUM ÆRUGINOSUM, *Carmichael*, *Hooker.* (Hymenophyllum Franklinianum, *Colenso*, Trichomanes æruginosum, *Thours.*)—A well-marked species, with ovate, dense, tripinnatifid fronds, covered with a whitish pubescence. Native of New Zealand. Pendent from rocks and trunks of trees. Fronds four to eight inches in length. There is a variety with more acuminate fronds, and with more distant pinnæ and divisions, which is named var. *Franklinianum.* Figured by Sir W. J. Hooker, plate 34—A, vol. i, "Species Filicum."

HYMENOPHYLLUM ASPLENIOIDES, *Swartz*, *Willdenow*, *Hooker*, *Hedwig.* (Hymenophyllum palmatum, *Klotzsch.*)—A delicate and pretty Fern, with narrow, shining, pinnatifid fronds, on wiry stems. Native of Jamaica and Brazil. Pendent from mossy rocks and trunks of trees. Length of frond from two to five inches.

HYMENOPHYLLUM BLEPHARODES(?) *Presl.*—A pendent species, with broad, attenuated, dense, bi-tripinnatifid fronds. Native of the West Indies. Length from three to five inches.

HYMENOPHYLLUM DICHOTOMUM, *Cavanilles, Swartz, Willdenow, Hooker.* (Hymenophyllum plicatum, *Kaulfuss.*)—A beautifully crisped and transparent species, with broad, much-divided fronds. Native of Chili, Juan Fernandez, and Java; on mossy trees. Length of frond from four to six inches. Figured by Sir W. J. Hooker, plate 36—A, vol. i, "Species Filicum."

HYMENOPHYLLUM FLABELLATUM, *Labillardiere, Willdenow, Hooker,* not *Brown.* (Hymenophyllum nitens, *Brown.*)—A lovely Fern, with dense, glistening, pinnate fronds. Pendent from trunks of Tree Ferns, other trees, and from holes in rocks and roots of trees. Native of Tasmania and New Zealand. Length of frond from six to twelve inches.

HYMENOPHYLLUM HIRSUTUM, *Swartz, Willdenow, Raddi, Hedwig, Hooker.* (Hymenophyllum venustum, *Desvaux.* Trichomanes hirsutum, *Linnæus.*)—A very delicate small species, with narrow, pinnatifid, transparent fronds, hairy. Pendent from trunks of trees. Native of Jamaica, Trinidad, and Organ mountains. Length of frond from three to nine inches.

HYMENOPHYLLUM NUDUM(?) *Desvaux.*—A small Fern, with erect, broad, bipinnate fronds, fringed with hairs. Native of the West Indies. Length of frond from an inch and a half to three inches.

HYMENOPHYLLUM PLUMIERI, *Hooker and Greville.* (Filicula digitata, etc., *Plumier.*)—Nearly allied to *Hymenophyllum ciliatum;* fronds larger and more remote. A handsome Fern. Native of Hispaniola and Columbia.

HYMENOPHYLLUM RARUM, *Brown, Hooker.* (Hymenophyllum fumarioides, *Bory, Kaulfuss, Kunze.* H. Australe, *Willdenow.* H. semibivalve, *Hooker and Greville.* H. imbricatum, *Colenso.*)—Small pendent fronds, bipinnatifid, densely matted, somewhat resembling *Hymenophyllum Tunbridgense.* Native of Tasmania, New Zealand, Chili, South Africa, Bourbon, and Mauritius. Variety *Imbricatum* has pellucid fronds, with overlapping pinnæ.

HYMENOPHYLLUM VALVATUM, *Hooker and Greville.*—A lovely species, growing on trunks of trees, with ovate, attenuated, dark green, tripinnatifid fronds, beautifully undulated. Stalks black and wiry. Native of Columbia, at an elevation of from three to six thousand feet above the sea. Length of frond from six to twelve inches.

TRICHOMANES ACHILLÆIFOLIUM, *Willdenow.* (Trichomanes rigidum, *Swartz, Hedwig.* T. Mandioccanum, *Raddi.* T. pyramidale, *Wallich.* T. obscurum, *Blume.*)—A handsome tufted Fern, with quadripinnatifid, erect, smooth fronds. Native of Jamaica, Dominica, Brazil, Peru, Quito, Mauritius, Philippine Islands, Ceylon, etc. Length of frond from twelve to eighteen inches.

TRICHOMANES ALATUM, *Swartz, Willdenow, Hooker and Greville.*—A handsome tufted Fern, growing on trunks of trees, having lanceolate, deep green, subtripinnatifid fronds. Native of Jamaica, St. Vincent, Trinidad, and Hispaniola. Length of frond from nine to fifteen inches.

TRICHOMANES CORIACEUM (?) *Kunze.*—A most lovely Fern, allied to *Trichomanes Bancroftii.* Its fronds, however, are larger, and there are more involucres. Tripinnatifid and excessively crisped. A native of the West Indies, growing among moss and on trees.

TRICHOMANES CRINITUM, *Swartz, Willdenow, Hedwig, Hooker.*—A lovely-fronded Fern, having linear-ovate, very glaucous, thin, membranaceous, pinnate fronds, covered with white hairs. Stems very hairy. Native of Jamaica and St. Vincent. Fronds from four to five inches in length.

TRICHOMANES ELONGATUM, *A. Cunningham, Hooker.*—A tufted Fern, with very dense, triangular-ovate, dark green, rigid fronds, with erect wiry stems. Inciso-pinnatifid. Native of New Zealand. Fronds from six to twelve inches in length, of which more than a half is occupied by the stipes.

TRICHOMANES FILICULA, *Bory, Hooker.* (Trichomanes bilabiatum, *Nees.* T. bilingue, *Menzies.* T. bipunctatum, *Poiret.* T. melanotrichum, *Schlechtendal.* Hymenophyllum filicula, *Bory.* H. alatum, *Schkuhr.* Didymoglossum decipiens, *Desvaux.* D. filicula, *Desvaux.*)—A creeping species, with erect, smooth, firm, dark green, bipinnatifid fronds, on winged stalks. Native of Mauritius, Bourbon, Ceylon, Nepal, Luzon, Otaheite, etc. Fronds from two to five inches.

TRICHOMANES FIMBRIATUM, *Backhouse.*—A very beautiful undescribed species, allied to *Trichomanes Kaulfussii,* but shorter and much broader in its fronds; ovate, tripinnatifid; ultimate segments attenuated into long bristle-like points. Stem erect and very broadly winged. Native of the West Indies.

TRICHOMANES FLORIBUNDUM, *Hooker.* (Trichomanes pinnatum, *Swartz,* T. rhizophyllum, *Cavanilles.* T. vittaria, *De Candolle..*)—A noble, and one of the most lovely Ferns of this genus, with broad, tufted, pale green, very transparent, pinnate fronds. Beautifully fringed with hair-like receptacles, attenuated and rooting at the extremity. Erect in habit. Native of Orinoco, Guiana, Dominica, Barbadoes, Jamaica, Trinidad, Guatemala, Peru, Brazil, and Surinam. Length of frond from twelve to twenty-four inches.

TRICHOMANES FŒNICULACEUM (?) *Bory, Hooker.* (Trichomanes meifolium, *Kaulfuss.* T. gemmatum, *J. Smith.*)—A beautiful Fern, with narrow, rigid, highly-divided fronds, with hair-like pinnules, and wiry stems. Native of Mauritius and Borneo. Length of frond six or seven inches.

TRICHOMANES INCISUM, *Kaulfuss, Bory, Hooker.*—A pendent creeping Fern, with very delicate, transparent, bipinnatifid, ovate fronds, margined with star-like tufts of hair. Native of St. Catharine and Brazil. Length of frond from three to four inches.

TRICHOMANES JAVANICUM, *Blume, Hooker and Greville.* (Trichomanes rigidum, *Wallich,* not of *Swartz.* T. setigerum, *Wallich.* T. rhomboideum, *J. Smith.* T. curvatum, *J. Smith.* T. alatum, *Bory,* not

Swartz.)—A fine, distinct, tufted Fern, with erect, smooth, shining, dark green, pinnate fronds, with hairy stalks. Length from eight to twelve inches.

TRICHOMANES LUSCHNATIANUM, *Presl.*—A handsome climbing Fern, allied to *Trichomanes radicans*, but is sessile, the fronds lanceolate, and having a very long and slender creeping caudex, (as much as fifteen feet.) Native of Brazil. Length of frond eighteen inches.

TRICHOMANES MEMBRANACEUM, *Linnæus, Swartz, Willdenow, Hooker.* (Filix hemionitis, *Plukenet.*)—A very distinct, interesting, creeping Fern, having most delicate, elegant, entire, roundish, nearly stemless, deep green, glossy fronds, torn on the margin, and with fan-like veins. Native of the West Indian Islands, growing on trunks of trees. Length of frond from two to three inches.

TRICHOMANES PUNCTATUM, *Poiret, Kaulfuss, Hooker and Greville.* (Trichomanes sphenoides, *Kunze.*)—Very small fronds. Smaller than *Muscoides*, with roundish obovate, bluntly incised fronds, with fan-like veins. Native of Martinique, Guadaloupe, Trinidad, Gorgona, Peru, and Guiana.

TRICHOMANES REPTANS, *Swartz, Willdenow, Hedwig, Hooker and Greville.* (Trichomanes hymenodes, *Hedwig*, Phyllitis scandens, *Sloane.*)—A very minute Fern, creeping on palms, etc., with roundish incised fronds, with fan-shaped veins. Native of Jamaica, St. Vincent, and Cuba. Length of frond about an inch.

TRICHOMANES RHOMBOIDEUM, *Cuming.*—A remarkable species, with narrow pinnate fronds. Allied to *Trichomanes Javanicum.* Native of Philippine Islands. Length of frond nine to twelve inches.

TRICHOMANES RUPESTRE, *Backhouse.*—A new species, forming tufts of broadly-ovate, dense, rather undulate, pinnate fronds, on round hairy stalks. Native of Borneo, growing on bare wet rocks.

TRICHOMANES SETIGERUM, *Backhouse.*—A new, undescribed beautiful species, allied to *Trichomanes pluma*, but larger. Fronds tufted and curving. The ultimate divisions of the pinnæ hair-like, giving a brush-like appearance to the fronds. Native of Borneo, where it grows in crevices of rocks.

TRICHOMANES SUPERBUM, *Backhouse.*—An undescribed noble species, with dense, triangular, tripinnatifid fronds, on erect, broadly-winged, and very hairy stalks. Native of Borneo. Fronds from two to three feet in length.

TRICHOMANES THUJOIDES, *Desvaux, Hooker.*—A handsome tufted Fern, with ovate, attenuated, tripinnatifid fronds, on erect stalks. Native of the Mauritius. Length of frond from nine to eighteen inches.

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THE END.

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ERRATUM.

Page 85, for Var. Fissile, read "Var. Submarginatum-multifidum," and for Var. Submarginatum-multifidum, read "Var. Fissile."

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